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THE "CORN-STALK" DISEASE IN CATTLE;

And the so-called Pleuro-pneumonia Contagiosa in an American Ox.

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(Concluded from page 96.)

FINDING experiments with pure cultures of the Corn-stalk germ gave positive results, further test was made with Corn-fodder from Fremont, Nebraska, the corn leaves being given to a rabbit, which died. In this animal the same germ was found; it was isolated on cultures, which were shown by their growth on potatoes, eggs, and in gelatine, to be strictly pure.

NATURE OF THE CORN-FODDER DISEASE.

Dr. Billings says: "This 'Corn-fodder' disease has nothing of a contagious character about it. It does not owe its primary origin to the presence of a diseased animal in the first place, or of any material from such a diseased animal among healthy stock; it is not an endogenous (generating from within) disease. On the contrary, a better example of an endogenous disease (owing its genesis, or origin, to external circumstances) could not possibly be found. The word 'contagious,' simply expresses to us the fact that the infection of a healthy individual in a given disease, either took or can take place by means of contact, either with an individual affected with a specific disease, or with some material directly from such an individual. Correctly speaking, then, the word contagious only means that the primary origin of the *inficiens* (infecting material) was within the body of an already diseased animal. Any other definition of the word

is absurd, but the terms which I have selected to express the class of diseases, while equally as technical as that of Pettenkofer—'Endogenosis'—is more self-evident to the ordinary class of readers, viz., 'intra-organismal" that is originating within or from a diseased animal organism. On the contrary, I have called the opposite class 'extra-organismal diseases,' simply because their primary origin must be invariably sought for in the external surroundings or conditions. In this disease in question, we have clearly demonstrated that its primary cause is to be sought in the 'Corn-fodder,' and, perhaps, the grasses which certain susceptible animals eat." The Doctor further says: "Were I to be asked what disease of animal life this Corn-fodder disease most closely resembles, I should say it is the exact counterpart of the genuine Swine Plague. In this 'Corn-fodder' disease in cattle, every organic lesion and every variety of lesion observed in Swine-Plague will be seen, with the exception of the ulcerative and neoplastic, and perhaps diphtheric lesions, seen in the intestines, the two former of which are primarily due to idiosyncrasies of structure in the hog, and only secondary to the action of the bacteria causing that disease. Here, too, we have the same excessive parenchymatous changes in the great glandular organs of the body, common to all acute diseases of this character. Here, too, we have pneumonia in all the various types seen in the Swine Plague; and, again, one form bearing the very closest resemblance to those in Swine Plague, marked by the engorgement of the interlobular vessels, and coagulation of the blood within them. In both species of animals, the frequency of this lesion is due to the peculiar loose and open character of the interlobular tissues and the large vessels circulating therein. Again, in both diseases we find an acute broncho-pneumonia, not due to the entrance of the specific germs *via* the respiratory tract, but to the extreme degree of interference which the circulation suffers, and the consequent effusion of serum into the air tubes, especially the smaller, obstructing them, and leading to atelectasis and pneumonia. I neglected to call attention to this variety of consolidation in my report on Swine Plague; but it is really a very common form, and to be easily distinguished from that variety, caused by the entrance of the germs *via* the respiratory tract, *which is more acute, more multiple, more rapidly caseous, and especially not hæmorrhagic in any of its parts or in the surrounding tissue*, and it also begins immediately around the tube; whereas this form begins in the more distant part of the bronchiolic territory.

"In the 'Corn-stalk' disease, my experiences are, unfortunately, limited. I have found the form of broncho-pneumonia mentioned, and not the specific, bronchial-infective type seen in Swine Plague. Considering that the manner of infection is of necessity by way of the intestinal canal, it is very doubtful if the bronchial-infective variety ever occurs in connection with this germ. But I have seen another form of broncho-pneumonia in this disease, due to an entirely adventitious bacillus capable of developing in the catarrhalic-infective bronchioles; but which had no more connection with the disease in question, than if the animal had been afflicted with verminous bronchitis, and exposed to dust of some kind in which such a germ was suspended. In sections of such lungs, sometimes one variety, and sometimes several varieties of adventitious germs may be found mixed up with the genuine organism, which latter may have had nothing whatever to do with the lesions in question. In this disease, as in Swine Plague, we may frequently find an entire absence of consolidation in the lungs, if I can judge by the very meagre notes sent me on the lesions observed, but still more by a correct appreciation of the natural pathological results in such a disease. In the same way with the spleen; sometimes it is swollen, often excessively; at others, not. But never-failing lesions will be those of a hæmatogenic character, varying from capillary to coarse vascular engorgements and hæmorrhages of various dimensions. The diffuse capillary engorgements of the kidneys, which may be considered as pathognomonic of the Southern Cattle Plague, never occur in this disease, and hence may eventually prove of differentio-diagnostic value, should it be finally shown that the germ of the Corn-fodder disease also invades grasses and causes disease in animals grazing during the summer months. Acute lesions that will never be missed, aside from the disturbances of the circulation, are those of the dense parenchymatous glandular organs, which are essentially specific to the extra-organismal septicæmiæ, and vary in degree from clouded swelling to the most extreme grades of fatty degeneration, as has been shown in the very brief microscopical notes.

"To sum up, then, the Corn-fodder disease is an *acute extra-organismal septicæmia, due to a micro-organism belonging to the class of ovoid-belted germs, to which variety of diseases also belong the Swine Plague, Southern Cattle Plague, Wild Seuche, Fowl Cholera, and Yellow Fever in Man; though in no case are their micro-etiological organisms one and the same; but each is*

a specific entity, capable only of causing its specific disease under natural conditions in these animals specially predisposed to its action, from some utterly unknown, but equally specific physiological idiosyncrasy, peculiar to its species."

SYMPTOMS OF THE CORN-FODDER DISEASE.

"In endeavouring to portray the symptoms of this disease, we come face to face with a question of exceeding difficulty, because of its very close resemblance to other diseases which occur in cattle in our Western States. And even Anthrax itself offers intra-vital phenomena, which very often, more or less closely resemble those presented by this disease, especially in its most acute form.

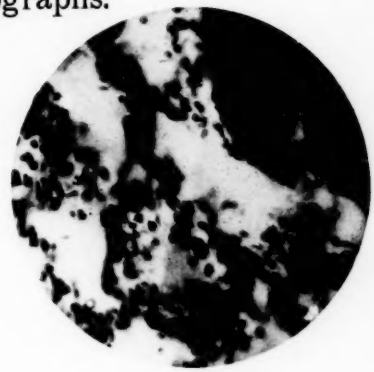
"In the first place, as to duration. Like the Swine Plague, this disease may be fatal in 24 hours; or it may extend to eight or ten days before such a result occurs. It is not a *universally fatal disease*, and it is highly probable that it is also of a non-recurrent type.

"In the first place, we have to do with an acute blood-poison disease, which—like all such diseases—is accompanied by more or less excessive exacerbation of the bodily temperature, varying, so far as known, from 39° to 42° C., that is, from 102·2°, to 107·6° Fahr. Such an excessive rise in the temperature must necessarily be followed by equally severe changes in the parenchymatous organs of the body, and consequent disturbance of the circulation, which frequently leads to excessive circulation-changes in the lungs, often followed by pneumonia, and most insufficient oxidation of the blood. Hence, under such circumstances, one would naturally expect a much accelerated and often very weak pulse, and increased respiration, which, when consolidation of the lungs is present, is also very laboured. These disturbances of the circulation frequently extend to the brain, where engorgement and cerebral pressure occurs, which, in some animals, takes on the form of 'craziness,' as the owners call it. The animals then bellow fearfully, and chase other animals, especially dogs, hogs, or fowls, but seldom human beings. Other animals stand by themselves, or are depressed and loth to move. Separation from their companions is one of the first indications of illness. As nearly as I can discern, they can all swallow, and all drink. This is a very important point to be remembered.

"As in Swine Plague and Southern Cattle Plague, constipation is a very frequent occurrence, while laxity of the bowels also often occurs, and may be looked upon as rather

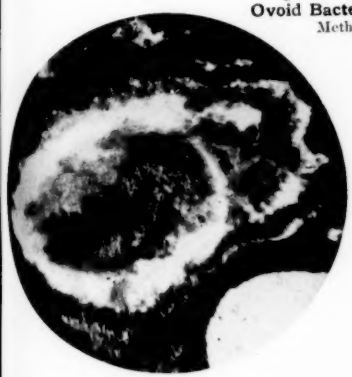
Photomicrographs.

1. American Ox (Deptford)
Section of Bronchus.
Haematoxylin × 350.

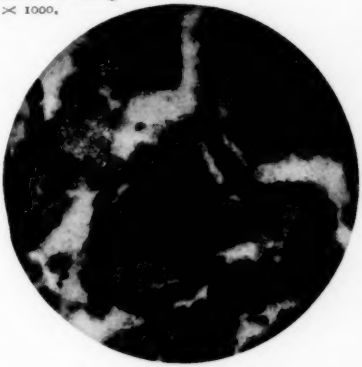


2. American Ox (Deptford)
Section of Lung.
Haematoxylin × 350.

3. American Ox (Deptford)
Ovoid Bacteria. Section of Lung.
Methyleneblue × 1000.



4. Pleuro-Pneumonia-Contagiosa
Section of Bronchus.
Picro-carmine × 350.



5. Pleuro-Pneumonia-Contagiosa
Section of Lung.
Picro-carmine × 350.

Thomas Rowhill, F.R.C.V.S. photo.
Edinburgh 1891.

Lichtdruck Julius Klinkhardt, Leipzig.

a favourable complication. Red urine does not occur. The visible mucosæ are injected, and often have a yellowish-red tinge. Milch cows soon slacken in their yield of milk, and frequently the secretion ceases altogether for a time."

We will now consider the points of identification (or rather the evidence in support of same) between the "Corn Stalk Disease," and the so-called "Pleuro-pneumonia contagiosa" in an American ox landed at Deptford.

My remarks are limited to the conditions present in a piece of the lung of that animal, forwarded to me by Professor Williams, who, at the same time, sent a piece of the lung of an animal affected with undoubted contagious Pleuro-pneumonia; and, as far as the latter is concerned, the subject having been sufficiently ventilated recently, repetition is unnecessary. I therefore beg to draw attention to Figs. 4 and 5 accompanying this article, they being photo-micrographs from sections of this piece of typical Pleuro-pneumonia Contagiosa mentioned above; and comparison of the same with Figs. 1 and 2 (sections of the Deptford ox's lung), certainly shows to any unbiassed person very marked differentiation.

Microscopical examination of a section of the Deptford ox's lung reveals many points of identity with the lesions mentioned by Dr. Billings, as occurring in the "Corn Stalk Disease."

First.—The condition of the bronchi is very striking, especially the swollen condition of the mucosa and infiltration of the submucous connective tissue (in fact M. Nocard calls attention to this lesion in his report on infectious broncho-pneumonia in United States Cattle landed in France). (*See* Fig. 1 × 350.)

Secondly.—The plugging of the larger vessels with greyish, dense packed material described by Dr. Billings, is also present in the Deptford lung, as well as the thread-like lines (also described by Dr. Billings), running through the dense material plugging them. (This condition might lead an inexperienced or careless investigator to mistake the lesions for those of Pleuro-pneumonia contagiosa).

Thirdly.—The densely-packed condition of some of the alveoli, described by Dr. Billings, as well as the round-cell infiltration in the interstitial spaces, are both well-marked lesions in the Deptford lung.

Lastly.—We have to consider (or to account for) the presence of bacteria in sections of the Deptford ox's lung, morphologically identical with those described by Billings as

the cause of the Corn Stalk disease, and by M. Nocard in infectious broncho-pneumonia amongst American Cattle landed in France. Before doing so, it is first necessary to describe the condition of the piece of lung from which the sections showing these bacteria were obtained. Professor Williams forwarded to me preserved in alcohol, a piece of the Deptford ox's lung, brought to him by Dr. Wray, the American Inspector, who travelled all night; and in the morning, when the packet was opened at the New Veterinary College, it was remarked by Professor Williams that antiseptic precautions had been observed, and, moreover, the material was rolled in a piece of oil-cloth or oil-paper. Mr. Young, M.R.C.V.S., who was at that time Assistant in the College Laboratory, supplied me with similar information, so that the likelihood of the piece of lung, received by Professor Williams, arriving in a rotten condition is very remote, not to say impossible.

Furthermore, it is well known that putrefactive bacteria penetrate the organ or piece of tissue, whatever it may be, from without; their number is found to diminish in proportion to the distance from the outside surface, while the inner portions are usually quite free from them. The piece of lung forwarded to me was an inner portion, as no *pleuro-pulmonalis* was present. (Having arrived, as already mentioned, preserved in alcohol, cultivation experiments were impossible).

At the same time as sections of this piece of lung were stained for histological changes, some were also stained for bacteria; and I sent a slide to Professor Williams informing him. I noted the presence of ovoid bacteria in sections of the Deptford ox's lung. At that time, unfortunately, I did not possess a sufficiently good lens to show the definite morphological characteristics of the bacteria in question, in sections. However, the sections were carefully preserved, and the histological changes present were considered sufficient to justify the diagnosis—that the Deptford ox was not affected with contagious Pleuro-pneumonia. At a later date, I acquired a lens, &c., made by Zeiss, of Jena, of the most modern manufacture, and about the same time the result of M Nocard's investigations regarding infectious broncho-pneumonia appeared in the VETERINARY JOURNAL. I immediately stained some sections with methylene blue and fuchsin, specially mentioned by that investigator as affording the best results. I was then able to demonstrate in every section of the Deptford lung stained, the presence of ovoid-belted organisms,

which corresponded to those described by M. Nocard, as follows: They fixed the aniline colour most intensely at their polar ends, and measured one micro-millimetre long, and three to four-tenths of a micro-millimetre broad; and, furthermore, they could be differentiated in the lymph spaces resembling a state of pure culture. M. Nocard says: "*This single character alone sufficed to affirm that the lesion was not of a pleuro-pneumonic kind.*" Again, they could not be stained properly by the Gramm method, as these bacteria are decolourized on contact with iodine. The method employed to differentiate these organisms in the Deptford lung, was as follows: Thin sections were stained for three or four hours in a solution of methylene blue, filtered, and placed in a watch-glass, to which was added one-third of a solution of kali causticum (1 to 10,000 of water), boiled and filtered previous to use. One can, if preferred, allow the sections to remain in this solution for five or ten minutes before adding the aniline dye (when using fuchsin omit the kali causticum, as the carbolic acid in the fuchsin stain will serve the same purpose); and if desired, heat can be applied to the watch-glass and the preparation of the sections be continued for five or ten minutes; but it is preferable to leave the sections in the dye for three or four hours, thereby preventing the destruction of the tissues by heating.

Having allowed the necessary time for staining, remove a section into a watch-glass (it is better to handle only one section at a time) containing 1 per cent. acetic acid in water, or 50 per cent. alcohol, and allow it to remain for a few seconds (the exact time being a matter of experience), as these organisms are very easily decolorized (in fact, it is a special feature of this class of bacteria). Now remove and wash the section in 50 per cent. alcohol for a few seconds. At this stage you can employ a contrast stain for the tissues, and *eosin* is very good, with methylene blue. After using the contrast stain, put the section again into 60 per cent. alcohol, then just dip it into 90 per cent. alcohol, and put into a glass dish containing two parts of aniline oil and one part of zylol; this is necessary, for if you put the section into absolute alcohol, the solvent effects of this are so great that it would probably decolourize all the bacteria. Now transfer the section to oil of cedar, and when clarified, mount in Canada balsam. In changing the section from one solution to another, it is preferable to employ a piece of thin oiled paper, which not only prevents the section being torn, but when it leaves the oil of cedar, you simply require to press the paper,

section-side down, on the slide, and apply gentle pressure to one end of the paper, at the same time elevating the other, when it will come away, leaving the section adherent to the slide without a wrinkle.

Sections of the Deptford ox's lung prepared and mounted in the above-mentioned manner, when examined with a Zeiss 1·5 aprochromatic-homogenous-oil immersion objective, and a No. 8 compress-occular, yielding a magnification of 1,334 diameters, shows the presence of ovoid-belted bacteria (see photo micrograph No. 3 × 1,000) in the form of single cells, which have taken up the colour readily at the ends (or poles), leaving the middle part unstained, and appearing as a bright gap between the two darkest poles. (When imperfect instruments and methods are applied to these organisms, each may be mistaken for a pair of cocci, the clear intermediate connecting link escaping an imperfect eye.) These phenomena were clearly differentiated when the bacteria were stained with methylene blue, the fuchsin method not yielding such perfect results. These organisms belong to a class which includes the bacterium of Fowl Cholera, Ferret Plague, Swine Plague—both English and American—Danish Hog Cholera, Southern Fever (Corn-Stalk Disease—Billings and Nocard); and fully identical with them is the germ of the Hog Plague (Schutz and Löeffler), Duck Cholera, Game Plague, and Rabbit Septicæmia, but a mere tyro could by no possibility mistake them for *common putrefactive germs*. Statements regarding putrefactive bacteria must be accepted with great caution, because, as Fraenkel says: "The Bacterium Termo is for us, therefore, an abstract idea, and does not apply to any one species; it should be banished from our nomenclature until some well-defined species is found that performs a particularly important and conspicuous part in the process of putrefaction, and to which one might then justly give the name Bacterium Termo as a title of honour. To arrive at such a result, extensive investigations would be necessary, for hitherto this important question of putrefaction has remained an almost unploughed field of bacteriological research."

The germs found in the lung of the Deptford ox cannot be regarded as the micrococci of Pleuro-pneumonia contagiosa, described by Dr. Woodhead, on page 455 of his work on bacteria, *Micrococcus der Lungenseuche der Rinder*. He says these *micrococci* "consist of cocci of various sizes, of an average diameter of ·9 micro-millimetres; they are single, or may be arranged in short chains of from two to six cocci, and are usually surrounded by a somewhat deeply-stained capsule." The

germs in the Deptford lung possess no such characteristics as these. The size is different, and the capsule is absent; the one is a micrococcus, the other a bacterium.

At Newcastle, Professor McFadyean tried to prove that the Deptford ox was affected with contagious Pleuro-pneumonia; but how? He does it by submitting naked-eye lantern and microscopic preparations, and concludes—because no one present was able to distinguish the Deptford ox preparations from the others—that the latter was a case of contagious Pleuro-pneumonia. This is surely no scientific proof. Furthermore, Professor McFadyean is drawing the long bow, and not dealing with the hard facts of science, when he asserts that Professor Williams' representatives were so foolish as to attempt to convince practical veterinary surgeons that "one or two micro-photographs can afford more valuable evidence than a careful naked-eye examination of the diseased lung in the differential diagnosis of Pleuro-pneumonia contagiosa." The evidence actually relied upon was—pieces of the Deptford ox's lung, sections of the same lung under microscopes (see fig. 2 × 350), and pieces of the lungs of other American cattle condemned for Pleuro-pneumonia contagiosa—previous to the Deptford case—at Liverpool.

And the most convincing proof was the presence of the previously-mentioned ovoid-belted organisms in a section of the Deptford ox's lung.

Regarding the piece of the Deptford ox's lung, it was handed round at the meeting, but no remark did I hear from Professor McFadyean regarding the specimen. Regarding the section showing the bacteria, he, like a true scientific man, expressed no opinion; in fact, he never looked at it. With respect to the sections of lung under the microscope, Professor McFadyean examined one, and said it was catarrhal-pneumonia, his diagnosis agreeing with that of Professor Williams, Dr. Hunter and myself. This specimen was from a piece of lung sent to the New Veterinary College for diagnosis. That both Dr. Hunter and myself identified as catarrhal-pneumonia, sections shown us by Professor McFadyean, is correct; but regarding the section I examined, Professor McFadyean—after hearing my diagnosis—said it was from a recent outbreak of Pleuro-pneumonia contagiosa in an Edinburgh dairy, and then he said it was "no disgrace," as the section shown to me exhibited catarrhal-pneumonic lesions; but still the specimen was from a recent outbreak of contagious Pleuro-pneumonia. If such was the case, then one can only infer that he has again blundered or tried to mislead;

because at the close of the discussion on his Liverpool paper, he candidly confesses that "there might have been a small lesion of broncho-pneumonia in the piece of the (Deptford) lung examined by Professor Williams." Surely Professor McFadyean is scientist enough to say yea or nay, and not deal with *might have been* in a simple case like this. The bacteria exhibited by me at Newcastle, although not deemed of sufficient importance by Professor McFadyean at that meeting, were, however, commented upon at Liverpool, and pronounced by the gentleman to be "Common Putrefactive Bacteria." It is worth while to enquire somewhat carefully into the value of this remarkable statement. Furthermore, it is to be noted that the learned Professor could not form this opinion from my specimen; because, as already mentioned, it was beneath his notice at Newcastle (he never examined it.) The conclusion arrived at was formed from the rotten piece of lung in his possession, and, therefore, he concluded that because his specimen was in full putrefaction, our's must also have been in the same condition. But it is to be observed that he makes no attempt to prove this strange assumption. Does Professor McFadyean mean to say that the ovoid-belted organisms exhibited at Newcastle, are common putrefactive bacteria of different kinds? If he does, he is distinguishing morphologically identical organisms by the aid of his own powerful imagination, and is assigning characters to the putrefactive organisms which they do not possess. Furthermore, Professor McFadyean ought to know, as already mentioned, that septic bacteria penetrate the organ or piece of tissue, whatever it may be, from "*without.*" Their numbers are, therefore, found to diminish in proportion to the distance from the outside surface, while the inner portions are usually quite free from them. If, therefore, Professor McFadyean had taken the trouble to prepare properly a section from the centre of his rotten specimens, he might have been able to see for himself that the morphologically characteristic germs of Billings and Nocard were present in his own specimen, *putrid though it was.* Unfortunately, Professor McFadyean may not be familiar with the special *technique* necessary to find these germs, and, if so, he ought at once to confess his ignorance; because when requested by the Board of Agriculture to examine the Deptford ox's lung, before committing himself to mere assumptions, he ought to have had a basis of fact—that is, made cultivations as well as plate or roll cultures, and from the various colonies isolated the true pathogenic organism.

Then only could he give an authoritative opinion. But this was not done, and hence, as was to be expected, a blunder was made.

Professor McFadyean represents himself as regarding the evidence that the Deptford ox was the subject of Pleuro-pneumonia, as being a matter of opinion; whereas investigators who know their business eschew opinion, and deal only with hard facts which no man can gainsay. If these things are matters of opinion, a superior breed of investigators becomes a necessity; because the monetary interests involved in such vague opinions and assumptions are extremely great, and surely they do not justify the remuneration.

I may mention that, following the example of that gentleman, I sent the portion of lung from the Deptford ox to Dr. Billing for his opinion as to whether it presented the lesions of the Corn-stalk disease—for surely there could be no better authority than the discoverer of that malady, and his reply is: "There is no doubt you are right." I need quote no more from his letter.

EAR VERTIGO IN THE HORSE INDUCED BY ASPERGILLUS NIGRICANS.

BY THOS. B. GOODALL, F.R.C.V.S., CHRISTCHURCH, HANTS.

WHEN a new theory is propounded, it is the privilege of the veterinary surgeon to search for himself and "see whether these things are so." Personally it is my habit, and, I believe, a right one, to take the first opportunity of testing the trustworthiness of the theory, and of doing the little that lies in my power either to refute it, or to throw light on what may have been left in partial obscurity. It is only by such means that truth is unrolled and revealed to generation after generation of mankind.

It will be understood, therefore, what my feelings and motives were when the first case of Ear Vertigo came under my notice, after reading Dr. Fleming's article, and the subsequent correspondence on the subject, in the VETERINARY JOURNAL.

I should have deemed it much more satisfactory if, as I suggested early in the history of the case, the subject could have been purchased and placed under the supervision of some noted pathologist, as the testimony of an obscure country practitioner might not be credited.

My case is, in most points, a very ordinary one; all practitioners must have seen dozens of cases of what I was

taught, and have always looked upon and designated "canker" of the ear.

It may at once be recognised by the horse holding the ear back, giving evidence of the presence of some irritant, and the animal is always averse to having the ear handled. Stablemen call such horses "touchy" about the ears. On closer examination there will be found a number of bare white patches, or excrescences, of various sizes on the skin lining the inner aspect of the concha; or, in horses whose ears have been neglected, these organs will be found to have in them large quantities of desquamated epidermic scales, and this condition sometimes extends into the external auditory canal.

Hitherto I have looked upon these cases as practically incurable, and have advised as little pulling about of the ears as possible. In bad cases I have had them kept clean, and have applied anodyne lotions for the purpose of alleviating the irritability, though I have never expected recovery. I have known cases of spontaneous recovery, but after reading Dr. Fleming's article in the journal, I was particularly interested with the case I am now about to describe.

On December 12th last I was asked to visit a pony. I was told that she had fallen over when having the harness put on. I found my patient—a seven-year-old forest mare—in low condition. She had been turned out to grass during the day and taken in at night, when she received a little hay. She was used occasionally for light agricultural work. On this particular day, while the harness was being put on, the pony was reported to have tumbled over, but to have quickly regained her feet; as she *nearly fell* again while being put in the cart, it was deemed advisable to take her out of harness and send for me.

The appearance of the pony was striking and remarkable. The head was constantly inclined to the right side, and it was only with difficulty that it could be brought round in the opposite direction. The right ear was kept lying back, and every now and then (about every half-hour) the pony would *almost* tumble over in a fit; especially would she do this when excited, although she never quite "lost her feet."

She was standing in a dark stall, and I went up to her on the near side to take pulse, etc., and was endeavouring to bring the head round towards the near side, to note colour of mucous membranes, etc., when one of the epileptiform fits was at once induced. She suddenly fell away towards the off side, and backwards, and after a violent struggle, lasting,

probably a few seconds, but which appeared a much longer period of time to me in my uncomfortable position, *she nearly fell, but not quite.* She quickly regained the erect position, and was quiet again almost directly. In this and subsequent visits I could induce these "fits" as often as I liked, by bringing the head round towards the near side.

The skin on the inner aspect of the conchæ of the ears was covered by what at first sight had the appearance of warty growths, a condition usually designated "canker." I was given to understand that there had always been a difficulty in handling the ears. The pony's general health was good, though there seemed at times to be a little "reeling" of the hind-quarters while walking or turning.

I had seen dozens of these "ear" cases before, but had never known one to induce anything approaching "staggers;" but with my mind dwelling on Dr. Fleming's paper, and Mr. Sewell's article on the "Symbiots in the Ear of the Dog," I felt that this was an opportunity to ascertain whether this affection might not be parasitic. With some difficulty the head was secured, and after making a careful examination of the ear with my lens, I took some scrapings of the epidermis from under the exfoliated scales. I was quite prepared to find Acarians, but in this I was disappointed.

On every one of the slides on which I had mounted portions of these scrapings, there were found numbers of dark-coloured, round bodies, among and on the epidermic scales; they were also noticeable on the corteces of such hairs as were placed on the slides. I was quite satisfied that these were the fructifying parts of a fungus, but, as I could detect neither mycelium nor hyphæ, I hesitated to publish the case until the identity of the fungus could be more clearly established.

Having now made a most thorough investigation, I have no hesitation in pronouncing it to be the endogenous variety of the Aspergillus.

Although there is no record of these having been recognised as a cause of disease in our animals, it has been adduced as a cause of acute Otitis in man.

That I am correct in my diagnosis of the nature of the fungus, is abundantly proved by the case responding so readily to treatment.

The ears were cleansed occasionally, and *Sulphur* was freely applied in the form of ointment to the conchæ, and the dry powder to the auditory canal; and in a fortnight I had the case under control, and the pony cured, which, after all, is the point of most practical importance.

Since that time there has been no recurrence of the "fits;" the pony can be brought round to the "near" as readily as to the "off" side; the ears are carried naturally, and the hair has grown.

Mode of procedure in the identification of the fungus :—

The first step was to get fresh, clean scrapings from the ears.

Some of this was mounted *dry*, and in some specimens (and I mounted dozens altogether), only a *few* of the black bodies were visible; but in looking at these same dry specimens in three days' time, the numbers of the fungi had increased very considerably, proving them to be independent living organisms.

Then some scrapings were treated by immersion in Liq. Potassæ, and the fungi were brought out more clearly as prominent black bodies, varying in size, the largest being about $\frac{1}{4}$ and the smallest $\frac{1}{32}$, the size of an epidermic scale.

The next step was to obtain a scraping of "Favus" from a calf, and mount slides dry, and treated with Liq. Potassæ, for comparison; but there was no point of agreement between these and the "ear fungus."

I next mounted specimens of different *moulds*, the *Mucor penicillium*, &c., and in the Aspergillus I found what I was looking for; for amongst the beautiful arrangement of spores, hyphæ, and mycelium, some of these same black bodies were very noticeable—not by any means in all the specimens, but in two or three of them. Here, then, was the clue.

Further specimens from the ear were now mounted, and just on one of the slides I find spores and a faint net-work of mycelium.

The records of the life-history of the fungus are now searched, and we find it is reported to be highly polymorphic and that it sometimes bears endogenous, and at others exogenous spores. This agrees exactly with the results of my own observations in the present case.

The search is carried a little further, and we find it has been recorded that the *Aspergillus nigricans* has been found in the human ear, and that it has been the cause of acute Otitis.

We could not call this a case of Menier's disease, for we must know that it would not be possible for this fungus to gain an access to the regions of the ear on the inner side of the Tympanum; but its presence, in this instance, induced exactly such a train of symptoms as described in the article in the journal. It may have been from sympathy or from some other cause, but having detected a fungus, my business was to

get rid of it; and knowing the specific action of Sulphur in destroying this particular form of organism, I was induced to give it a trial, and, as will be observed, with most satisfactory results.

In pursuing these investigations, it has often occurred to me what a wealth of real pleasure and solid improvement is missed by the many who take everything for granted, without themselves searching into some of these most beautiful and charming, though hidden things of Nature.

I ought to mention that the bulbs of the hairs were always found diseased, having the appearance of a bundle of faggots tied together, with the ends irregularly projecting.

THE TRANSMISSION OF TUBERCULOSIS*

(Including an Experience of the Infection of Pigs and Calves by Means of Milk Derived from a Tuberculous Cow),

BY S. S. CAMERON, M.R.C.V.S., LECTURER ON ANATOMY AND GENERAL PATHOLOGY, MELBOURNE VETERINARY COLLEGE.

ASSERTIONS and statements to the effect that tuberculosis can be, and frequently is, transmitted from one species of animal to another, from bovines to man, and *vice versâ*, for instance, are scattered thickly throughout pathological literature. But the student of comparative pathology cannot fail to recognise and regret the disparity which exists between the number of such assertions and the number of records of actual experience of cases of transmission in support of these assertions, and on which they are presumably founded.

Tuberculosis is such an insidious, widespread, and fatal disease, that if what is perhaps one of its main sources in man, viz., infection by means of milk and flesh from diseased cattle, could be fully demonstrated, it would behove legislators and directors of State medicine to at once grapple with, and so far as possible, exterminate that source. If the position taken for some time past by veterinary scientists and comparative pathologists could, in the minds of the public, be amply justified by facts, that public would quickly insist on a remedy or attempted remedial measures. But advisers on sanitary legislation, and, indeed, the public generally, are slow to accept and act on evidence, unless it is substantiated by authoritative facts and experiences. In this they are justified, for they are well aware that faddists and theorists

* A paper read at the Quarterly Scientific Meeting of the Royal Veterinary Graduates Society, Melbourne, December 13th, 1891.

are apt to be carried away by enthusiasm far beyond the limits of truth. Earnestness of purpose may generate a temptation to overstate the case, and speculations only are apt to be submitted as scientific facts.

That the ingestion of the milk of cows affected with general tuberculosis may be a source of infection in children and young animals partaking of that milk, is now generally accepted. Generally accepted, I mean, by those whose studies have embraced the subject. But something more than this general acceptance is needed before the importance of the question can be thrust home in the public mind—before the apathy which characterises individuals touching their own constitutional welfare can be dispelled; and this something, this proof which is necessary before the fact of transmission can be thoroughly established, is difficult to attain.

It is extremely difficult, for example, for a medical man to trace the infection in a case of acquired intestinal tuberculosis in a child, to what may be its proper source, viz., the milk of an affected cow. In the present condition of legislation touching the inspection of dairy cattle, he would have to pursue his quest single-handed; and in his attempt to indicate the identical animal, would probably be at fault so often that the search would be unfruitful. In parenthesis, I am tempted to speculate how different this would be if he could at any time consult and obtain information as to infected dairies and cattle from a veterinary official, whose regular duties and intimate acquaintance with all possible foci for the distribution of the disease would enable him to at once point out the way. At present a medical man may suspect infection from a dairy, but he has not the means at hand to prove the correctness of his suspicions, and without this proof he will not be believed. Veterinary surgeons, too, are alike handicapped in any endeavour to afford proof of the danger to children of infected milk. In every-day practice they frequently encounter cows suffering from tubercular mammitis, the milk from which is mixed with that of others and distributed for family use, but, except in very rare instances they have no opportunity of observing its effect. In short, there is no connecting link between what the medical man sees and suspects, and what the veterinary surgeon sees and suspects. In the absence of this, proof is out of the question; the perhaps well-founded suspicions of each cannot be either confirmed or disproved.

The fact that it is a somewhat easy matter to produce tuber-

culosis in guinea pigs, rabbits, calves, &c., by inoculation of phthisical sputum or matter, is not proof that it can be transmitted by the ingestion, by animals and man, of milk or meat from a diseased animal. And even more is required than the experimental production of the disease by feeding animals on tubercular matter. It is the proof of the every-day liability of the infection of children or young animals partaking of cow's milk diet, and not only of their liability, but of their actual inception of the disease, which is evidently necessary to bring about a realisation of the importance of the subject.

Now, although no cases of human infantile tuberculosis, involving anything more than grave suspicions based upon very strong circumstantial evidence of transmission from the cow, have come within my own experience, I have an intimate knowledge of the sequence of cases in which the infection of pigs and calves from a diseased cow by means of the milk was a matter beyond dispute; and I venture to think that the detailed facts I shall submit will furnish a most important link in the chain of evidence establishing the transmissibility of the disease to human infants. For, in this connection, I would point out that pigs and human beings are alike omnivorous; and I see no reason whatever for supposing other than that if young milk-imbibing pigs can have the disease communicated to them in their diet, so can young milk-imbibing children.

The opportunity seldom offers to either veterinary surgeons or medical men to so thoroughly observe the progress and event of the transmission of disease as I was enabled to do. My opportunities combined those of the veterinarian who can bring to bear the aid of his scientific knowledge, and of the stockowner who can note the course, progress, and result of the disease, and can assign cause and effect; for the series of cases occurred at my home, on our own farm, and amongst our own stock. This was in England, during the latter portion of my period of pupilage, and naturally I took an observant interest in the whole affair. The series of cases lasted over two years, but in describing them I will be as brief as is compatible with the importance of the facts.

In September, 1882, my father bought at one of the local agricultural shows a first-prize shorthorn dairy cow. She was about six years old, in first-rate condition, and apparently sound. She calved about a week after purchase, and turned out to be a good milker, averaging from 26 to 15 or 16 quarts daily. The calf was a male, and apparently free from any taint of disease at that time, but I shall have occasion to refer to its subsequent history later on.

(To be continued.)

OIL OF EUCALYPTUS.

BY J. DOWLING ALLMAN, A.P.S., (LOND.)

AN oil distilled from the fresh leaves of *Eucalyptus globulus*, a large tree, native of Australia. The oil, when pure, is nearly colourless, has a warm mint-like taste, with a bitter after-taste, and a very peculiar mint-like odour. It is perfectly soluble in ether, alcohol, and the fatty oils.

Therapeutics.—Eucalyptus oil is in great demand just now, as a prophylactic in the prevailing malady—human influenza; so much so, that the stock is nearly exhausted, and the price has very much advanced. As a remedial agent, there can be no doubt as to the value of the drug, as it possesses very powerful antiperiodic properties, and is commended by many clinicians in the treatment of malarial and adynamic fevers; it is even asserted by some authorities to be more powerful than quinine, or some of the other derivatives of cinchona. Thus, for instance, Dr. Joseph Keller has employed it upon a larger scale than anyone else. He used it in four hundred and thirty-two cases of influenza, of which two hundred and ninety-three had suffered from previous attacks. Of the tertians 75·57 per cent., of the quartans 70 per cent., and of the quotidians 67·89 per cent. yielded to the remedy. He recommends it as especially valuable in obstinate cases in which quinine has been taken again and again (*Wiener Medizinische Wochenshrift*, xxii., 1872). It is also largely employed, and with excellent results, in the treatment of bronchitis, both acute and chronic; and even in asthma and catarrhal phthisis it is a very valuable remedy. It can likewise be used with considerable success for relieving the distressing cough caused by laryngitis. Half a drachm of the oil added to a pint of boiling water and inhaled, is the best mode of using the oil in the last-mentioned maladies. In veterinary therapeutics, the eucalyptus is now a great favourite, and holds a high position as a general antiseptic dressing, being preferred by many to carbolic acid. No matter how employed, whether it be in the form of the dilute oil, the ointment, or the gauze, any of the preparations can be used for the purpose of correcting the fœtor of gangrenous and ill-conditioned wounds, and it is quite as destructive to low organic growths as any of the numerous antiseptic agents. Rubbed down with vaseline or lard—one part to eight—is about one of the nicest applications to use for smearing over the hands and arms for all obstetrical operations, especially if there should be any laceration of the

vaginal passage; as the emollient effect of the vaseline or lard, and the antiseptic and nice balsamic odour of the eucalyptus, suggests its use. Some few years since, from the suggestion of my friend, Mr. W. Augustus Taylor, F.R.C.V.S., Manchester, I introduced some tape, cord, and silk, saturated with eucalyptus and iodoform for stitching wounds, and they are now in great demand, and are preferred by most veterinary surgeons to the metallic wire. The tape is especially adapted for stitching large open wounds in large surfaces, these healing by first intention; and the anæsthetic and antiseptic properties of the iodoform and eucalyptus lessen pain and hasten cicatrisation. Eucalyptus oil is of exceeding value for the purpose of painting over the tissues of an open joint, or gauze impregnated with the oil is of equal value. I have seen open joints that have been treated with the eucalyptus oil or gauze do remarkably well, healing up much sooner than by any other mode of treatment. The gauze is easily made—oil of eucalyptus, 1 part; resin, 3 parts; solid paraffin, 3 parts. Melt the paraffin and resin and stir in the oil; then dip ordinary muslin gauze and allow to dry. This gauze is also of great use for wrapping round amputations, or covering abscesses that have been laid open with the knife. For the treatment of nasal catarrh, or chronic discharge from the nostrils, the oil of eucalyptus is now a favourite remedy by specialists. Dr. Lenox Brown recommends an ointment which is now largely employed for diseases of the nasal membrane. It is made thus:—oil of eucalyptus, min. xx., cocaine, gr. ii., vaseline, ½ oz.; to be used with a camel hair pencil. Given internally, the eucalyptus oil has a powerful effect on the urino-genital mucous tract, as patients that have taken it notice that it is promptly eliminated by the kidneys and bladder; consequently, its use is suggested in cystitis or pyelitis, when the disease is of a sub-acute or chronic character. A nice way of administering the drug, is making an emulsion by rubbing it down with powdered tragacanth and glycerine.

Editorial.

THE RE-APPEARANCE OF FOOT-AND-MOUTH DISEASE IN ENGLAND.

THROUGH some more or less mysterious leakage in the defensive rampart erected by the Agricultural Department against the entrance of certain contagious animal diseases into this country, our old friend—or rather enemy—the Foot-and-Mouth Disease has been allowed to pay us another of its unwelcome visits from the Continent, and has given the veterinary branch of that Department some active occupation. At the commencement of February, some Danish Cattle in the Metropolitan Cattle Market, London, were discovered to be infected, and in a few days thereafter, outbreaks were reported in different parts of London, and in more or less remote parts of Kent and Sussex. The attempts to suppress the invader have already been attended with great inconvenience and loss, and as yet it is difficult to say how far they have been successful. The legal, naval and military forces of the Department have no doubt been energetically engaged in combating the enemy, ably supported by the veterinary profession; and it is to be hoped these combined—if rather motley—forces will soon succeed in extinguishing the foe. Where the infection came from is still, it would seem, rather doubtful; for though the Danish Cattle have been blamed, and our ports are accordingly closed to that country, yet it has been reported by Professor Bang to his Government, that the malady does not exist in Denmark, that the contagion could not possibly have been transmitted at Thisted, where the cattle were obtained, on the railway from that place to the port of embarkation, nor yet on board the ship that carried them to London; and that there is every probability of their having been infected in the Metropolitan Cattle Market. In support of the last of these conclusions, he points out that one of the four beasts from Denmark was not attacked by the malady, and that no Danish beast which was sold and removed from the market on February 1st—three days before the outbreak was discovered—was found to have been affected afterwards.

But it is well known that Foot-and-Mouth disease is very prevalent in Holstein and other parts of Germany; and as

Holstein adjoins Denmark, and the boundary between them being a land one, and probably no very severe restrictions as to traffic in cattle or their products in force, here, in all likelihood, the contagion has crept through. However this may be, we have again to make the acquaintance of a very serious malady which had been a stranger for six years, and which has now eluded the vigilance of the Agricultural Department. Considering the experience we have had of the disease, and the impassable barriers it was supposed had been erected against its re-admission, this re-appearance rather shakes our faith in our boasted impregnability against any infectious animal disorder from abroad, and forces an admission that we may miscalculate our means of securing immunity from such visitations so long as we permit living animals to enter our markets, or even to land on our shores from other countries.

CONTAGIOUS PLEURO-PNEUMONIA AND THE CORN-STALK DISEASE.*

BY PROFESSOR W. WILLIAMS, F.R.S.E., F.R.C.V.S., EDINBURGH.

I HAVE in the first place to give you a short history of the controversy which has arisen upon the subject of my illustrations. And as there are other matters of business on the agenda of the meeting, I will be very brief.

Early in 1879, pleuro-pneumonia was reported to have been found amongst American cattle landed at Liverpool, and the shippers there, in order to satisfy themselves of the correctness of the diagnosis of the veterinary advisers of the Privy Council, and who now hold the same position on the Board of Agriculture, requested Professors McCall, Walley, and myself to visit Liverpool and examine the cattle, and watch the *post-mortem* results; and here, gentlemen, commenced the dispute as, after having seen a few diseased lungs, I maintained that the malady was not pleuro-pneumonia, but a catarrhal or broncho-pneumonia, combined in a few cases with pleurisy, but in others the pleurisy was absent. Professors McCall and Walley agreed with the advisers of the Privy Council, and I found myself in a magnificent minority. During the spring and summer of that year several condemned lungs were sent to me from Liverpool, and after further investigation I found no reason to change my opinion.

The matter remained in abeyance, so far as the profession was concerned, until April, 1891. It is very true we now and then heard that pleuro had been detected amongst American cattle landed in this country, but we had no means of verifying or contradicting these reports; but some two years or so ago, the American Government sent inspectors to the various ports where American cattle are landed, for the purpose of investigating and reporting upon the cattle slaughtered; and, wonderful to relate, we heard no more of American pleuro, except one notable report from Dundee, until a lung of an ox was found at Deptford in April, 1891, and said by Professors Brown and Duguid and Mr. Cope, and confirmed by Professors Walley and M'Fadyean, to have *pleuro-pneumonia contagiosa:* and in further support of the correctness of the diagnosis, Mr. Chaplin, the Minister of Agriculture, said it was pleuro, *for he had seen the lungs.* But Dr. Wray, the American veterinary inspector at

*Read at the Meeting of the Scottish Metropolitan Veterinary Association on February 17th.

Deptford, disputed this opinion, and on the 18th April brought a portion of the lungs to me.

I examined this portion of lung along with my son, and we both came to the conclusion that it was not pleuro-pneumonia. I was again in the minority, and nothing more would have been heard of the matter, at least so far as I am concerned, had not a remarkable coincidence occurred in Paris during the winter of last year, "when it appears that MM. Redon, Godbille, and Blier, well-known veterinarians and sanitary inspectors at La Villette—the Parisian cattle market—where thousands of American were exposed for sale. On three several occasions these veterinarians affirmed that some of the animals were affected with an unusual disease of the respiratory organs. In November, 1890, in a lot of more than 400 cattle direct from Illinois and Indiana, one died and two were very ill, the symptoms leading to the suspicion that they were affected with contagious pleuro-pneumonia.

The sick animals were killed and the lungs examined by Godbille, who found no pleurisy, but such a suspicious appearance that, considering the importance of the matter, the two sets of lungs were sent to Alfort, to be submitted to M. Nocard, one of the most illustrious of veterinarians and pathologists, and he reported that at the first glance a section of the hepatised tissue presented the appearance of a recent lesion of *pleuro-pneumonia contagiosa*. The tissue was dense, compact, friable, the colour varied from bright red and deep brown to almost black, whilst the lobules were isolated from one another by thick septa, infiltrated with a considerable quantity of yellow limpid fluid, &c.—See VETERINARY JOURNAL, October, 1891.

Now, gentlemen, these appearances were startling, and if the investigator had been a smaller man than he is, he might have made his conclusions from these naked eye appearances, and said it was contagious pleuro; but there were great international and commercial considerations in question, as well as the scientific bearing of the subject; and Nocard did what our own Government officials ought to have done, if not in 1879, at least in 1891. He made further investigations, and arrived at the conclusion that he had other than pleuro to deal with. He found in the first place that the infiltration of the connective tissue was less abundant, the serum less albuminous; that the tissue of the lobule in the thickened girdle of connective tissue had not the uniformity of tint and consistence that characterise pleuro-pneumonia lesion; that it was harder, more manifestly hepatised in the centre than at its periphery—the lesion starting from the *bronchial and not from the perilobular tissue*. In "pleuro," it is the opposite, notwithstanding what Drs. Yeo and Woodhead have stated, and which statements have been partly accepted by Professor M'Fadyean.

There was another important differential sign. Pressure caused a notable quantity of thick, viscid, light-yellow pus—analogous to that observed in certain forms of verminous broncho-pneumonia—to issue from the bronchioles (this condition was very manifest in the Liverpool cattle in 1879); but a microscopic examination of this fluid and of the lung-pulp did not lead to the detection of ova, embryos, or worms of any kind. The bronchial mucous membrane was inflamed, thickened, corrugated, and more or less denuded of its epithelium, while the submucous connective tissue was infiltrated with yellow serum, and considerably thickened in places.

This muco-pus from the bronchioles was found to contain an abundance of short, oval, mobile bacteria, which appeared to be the only microbes present. The organisms were also found, as if in a state of pure culture, in the hepatised tissue, and more especially in the limpid serosity that distended the perilobular lymphatic sac. This single character alone sufficed to affirm that the lesion was not of a pleuro-pneumonic kind; for it is well-known that the lung serum in that disease is very poor in figured elements, and that when

it is collected pure from the infiltrated septa, it does not usually contain any microbes.

In this instance the microbe, which existed in such numbers, belonged to the large class of ovoid bacteria, of which the rounded poles fixed aniline colouring matters more strongly than the centre. It is well-known, as pointed out by Nocard, that the fowl cholera, the duck cholera, the septicæmia of rabbits and ferrets, the game plague, the swine plague, &c., all have analogous microbes, and which can only be distinguished from each other by the collective biological characters, and more especially by the effects of their inoculation on different kinds of animals.

Experimental inoculations were now made by M. Nocard, when he found that mice, rabbits, guinea-pigs, and pigeons, when inoculated subcutaneously with two or three drops of the serum or the culture, succumbed in less than forty-eight hours, without œdema at the point of inoculation, with intense congestion of all the viscera, but without any definite localization.

Sheep and calves inoculated subcutaneously, or in the trachea, with a cubic centimetre of culture, of serosity, or of virulent pus, did not die; they suffered, however, from intense fever, and remained prostrate, without appetite, for some days, but soon regained their normal condition.

Intra-pulmonary inoculation was more effective, as a calf of eight months and a ram of two years, inoculated in the right lung with five drops of peritoneal pus from a guinea pig, died in less than forty-eight hours, with fibrinous pleurisy aud exudative broncho-pneumonia analogous to that observed in American cattle, the lesions being very rich in bacteria. Nocard concludes that the disease does not resemble any known in France, and considers it is a malady special to American cattle, and is inclined to think that it is the affection known in the Western States as the "Corn-stalk Disease," described by Gamgee, and more recently by Billings, of whose observations there is an account by Bowhill in the last number of the VETERINARY JOURNAL. And the question arose as to whether the importation of this microbic broncho-pneumonia would prove a source of danger to France. M. Nocard was able, however, from his close observation of facts, and the experimental study of the conditions of contagion, to state that the malady had only very feeble contagious properties. In three very large importations in which the disease was detected, notwithstanding the considerable number of animals in each, and their long and close contact with each other, the affection did not spread, and the cases remained isolated ones. From all these facts, his opinion was there was no urgent danger, or any necessity for special measures.

Dr. Fleming, in a leader upon M. Nocard's observations (see VETERINARY JOURNAL, October, 1891), says; "The question that now arises on this side of the Channel is one of some moment, not only from an economical, but also from a pathological point of view. Many cargoes of American cattle have been condemned because it was found that one or two in each lot were affected with what was supposed to be the specific lung plague. United States veterinary surgeons have strenuously denied the existence of that malady among the cattle, and Professor Williams on two occasions, when the matter has been referred to him, has concluded that lung plague was not present, but the lesions were those of catarrhal or broncho-pneumonia; and now Nocard finds what we are almost forced to conclude is the same disorder, examines and experiments with it, as a scientist of his position and responsibility should do, and—*mirabile dictu*—arrives at the same conclusions as Williams, and even designs it by the same name."

Now, gentlemen, this leader in the VETERINARY JOURNAL seems to have excited the wrath of Professor M'Fadyean, who introduced the subject at the meeting of the North of England Veterinary Medical Association, held at Newcastle in November last, and at which I was invited to attend.

I intend to say very little about that meeting, except to express my surprise that any body of scientific men, including Professor M'Fadyean, should pass a formal resolution: "That the best methods of recognising pleuro were by the naked eye and hands, and that when these methods failed, little reliable assistance could be obtained from the examination of microscopic sections; that is to say, as far as determining it to be absolutely a case of pleuro-pneumonia was concerned." (*Veterinary Record*, 17th December.) Not satisfied with this exhibition at Newcastle, Professor M'Fadyean gave another demonstration to prove the errors of my conclusions at Liverpool on the 16th December last, and of the proceedings of this meeting we have an account in the *Veterinary Record* of 2nd January, 1892.

At that meeting, Professor M'Fadyean gave a description of the *post-mortem* appearance of pleuro, and a careful perusal of that description will at once convince any impartial reader that he labours very hard to prove the catarrhal origin of that disease. In one passage he says: "But the alveolar contents are by no means always fibrinous in character. In many lobules the change is distinctly a catarrhal one, air vesicles being filled with round nucleated cells, apparently the progeny of the swollen and proliferating epithelium. This change may affect the lobular bronchi also. Sometimes the catarrhal proliferation is associated with a peculiar transformation of the alveolar epithelium, that having become distinctly columnar in character. The fact that catarrhal changes are common in contagious pleuro-pneumonia has been strongly insisted on by several writers upon the subject, notably by Dr. Gerald Yeo and Dr. Woodhead."

With regard to the conclusion of Yeo, I refer you to my work on *Veterinary Medicine*, where you will find his errors clearly pointed out; and with reference to those of Woodhead, published in the *Journal of Comparative Pathology, &c.*, 1888, I wish to draw your attention to a review of that article by M. Delaforge, sanitary veterinary surgeon for the Department of the Seine —*Recueil de Méd. Vétérinaire* for 15th May, 1889, page 324. He says:—"In an analysis of 'Studies on the Pathological Anatomy of Pleuro-Pneumonia,' by Sims Woodhead, which appeared in the *Recueil* for 15th March, I read as follows: "The pathological process consists in an irritation of the mucous membrane of the smaller bronchi, followed by shedding of the epithelium of the pulmonary vesicles and a catarrhal proliferation of their elements. The virus then penetrates from these vesicles, and the smaller bronchi into the neighbouring lymphatics (peri-bronchial lymphatics), but not into those of the bronchi," &c. From this it appears that this author's opinion is that the initial start of the malady is in the bronchioles, and from these to the lymphatics or lymphatic spaces—the perilobular networks. This idea is radically false. Sims Woodhead mistakes the epiphenomena for the primordial phenomena—such as clinical observation shows very distinct. Every practitioner who cares to take the trouble to inform himself otherwise than through his imagination, will readily perceive that at the periphery of the hepatised mass there are almost constantly met with in an extent of 5, 10, 15, and 20 centimetres, connective tissue bands, with their ramifications distended by the exudate of pleuro-pneumonia, without any alteration, any change even in colour, in the pulmonary lobules, which are surrounded by these advanced-guard projections. When two such projections run parallel at a short distance from each other, we can clearly see, from their point of emergence from the hepatisation, the graduated effects of the compression they exercise on the imprisoned strip of lung. The congestion and density of the lobules is then marked in decreasing proportion from the base to the terminal divergence of the two infiltrated bands (or spaces); while, on the contrary, the lobules outside them and touching them remain absolutely healthy. The clinical facts, which are very common, I repeat, prove distinctly that the evolution of con-

tagious pleuro-pneumonia takes place from the connective tissue septa (interlobular spaces) towards the pulmonary vesicles, and not—as Sims Woodhead asserts—from the bronchioles towards these septa. The obstruction of the vesicles, the catarrhal and epithelial transformations, the blood stasis, the pulmonary hepatisation, in a word, are evidently not the initial essence here, but rather physical corollary or epi-phenomena. It is in this course, by this order in succession of the pleuro-pneumonia lesions, that, in a first case, for instance, the practitioner can most certainly affirm the contagious nature of the malady; for whatever may be said and written to the contrary, there is observed in the bovine species a non-specific pneumonia and pleurisy, which may or may not be coincident, and the alterations in which are physically similar to those of contagious pleuro-pneumonia. I have had cases, the circumstances attending the origin of which, as well as the consecutive circumstances, left no doubt in my mind with regard to this. And apart from inoculation, which is not always practicable, I did not know until then of anything that had been published that informs us how we can differentiate between what is specific and what is not. Nevertheless, this means is, if not always constant, at least so in the majority of cases. To find it, it is only necessary to make an attentive and minute examination of all the periphery of the diseased parts; if only for a few centimetres, we find an interlobular exudation advancing into the soft rosy tissue, we may be certain that we have before us the contagious pleuro-pneumonia. It is less with the view of rectifying the above error than of establishing this indication that I request the insertion of this short note."

Further, in order to prove this catarrhal theory, he says that the piece of brought to me by Dr. Wray might have had broncho as well as pleuro-pneumonia. I do not deny the possibility of the two conditions being sometimes —but, as a matter of fact, very rarely—co-existent; but it is a remarkable thing that the very many specimens of American lungs that I have seen since the commencement of 1879, should all have been catarrhal; and the many hundreds of pleuroed ones that I have seen in this country should have the catarrhal conditions absent. Since then I have received another portion of lung from Dr. Wray, in which the lesions are identical with those found in the 1891 lung:—

"To Professor Williams, New Veterinary College, Edinburgh.—Have mailed sections identical to last. Details to follow—WRAY."

"No. 39, Belvedere Road, Upper Norwood,
London, S.E.
15th January, 1892.

"W. Williams, F.R.C.V.S.,
New Veterinary College, Edinburgh.

"MY DEAR PROFESSOR,—In reply to yours of the 13th inst., the beast in question, when alive, presented enough symptoms of illness to enable the inspector at Deptford to pick him out of a large number of cattle. The symptoms presented were those of debility and difficult respiration. Owing to the wildness of the cattle, it is impossible to make a critical examination, consequently we are not able to auscultate or percuss these cases. The external appearance, and the position assumed by cattle affected with this form of lung trouble, are not indicative of acute pleuro-pneumonia. I mailed you a section yesterday that is identical with the section I gave you last April. The beast from which this section came was shipped, with 499 cattle, from Boston on 19th December, 1891, arrived at Deptford 2nd January, 1892, was discovered by the inspector 12th January as breathing very heavily, much debilitated and frothing at the mouth, as the allotted time had expired was ordered to be killed. On 13th January the lungs were sent to the Royal Veterinary College, where they were inspected by Professors Brown and

Duguid and Dr. Coghill. Professor Duguid stated 'that had he found the same lesions in a herd in this country, he would hesitate a long time before condemning the herd; at the same time he would like to watch the herd very closely.' Professor Brown stated 'that he had no doubt about the case being one of contagious pleuro-pneumonia, but as so many different lesions were presented, he would make some investigations.' Some fresh lymph was taken from the lungs, and injected into the left lung of a calf at twelve o'clock on 14th January; the calf up to the present time has not shown any ill-effects from the inoculation. The sections sent you were taken from the posterior and middle lobes of the right lung.—Very respectfully,

W. H. WRAY."

Again, Professor M'Fadyean stated in Liverpool that Mr. Bowhill, who, he observed, had served a short apprenticeship, had shown a microbe, and sneeringly described it as an ordinary putrefactive one. This was, to say the least of it, very unfair and very unprofessional, as Mr. M'Fadyean never saw it. If Mr. Bowhill is only an apprentice, it must follow that Nocard, Billings, Dr. Hunter, and myself are also apprentices, as we have all seen the same microbe, and both Billings and Nocard have proved the pathogenic importance of it by inoculations; but in order to prove the fallacy of Mr. M'Fadyean's uncalled-for remark, I wrote to Dr. Wray, and I append his reply, with the simple observation that when the lung arrived in Edinburgh it was free from putrefaction, and is so to this day, as you can easily verify in examining the part before you :—

"No. 39, Belvedere Road, Upper Norwood,
London, S.E., 8th January, 1892.

"W. Williams, F.R.C.V.S., &c.,
Principal, New Veterinary College,
Edinburgh, Scotland.

"MY DEAR PROFESSOR,—In reply to yours of the 6th instant, the section of lung that I showed you on 18th April, 1891, was taken from the lungs of a bullock that was slaughtered at Deptford on the afternoon of 14th April, 1891. The lungs from the said bullock were sent to the Royal Veterinary College the same afternoon. The next morning, 15th April, I inspected the lungs in company with Professor Duguid, and Doctors Coghill and Shaw. The section I took you being cut off immediately after the inspection, Professor Duguid cutting off an adjoining section at the same time. The section I had was placed in a tin box and there kept until I arrived home the same evening, was then taken out of the box and wrapped in a linen cloth saturated with a solution of bi-chloride of mercury [1 to 1,500], and placed on ice where it remained until 10 p.m. of the 16th, when it was taken out of the cloth, re-saturated with the solution, then packed in a clean box, having been removed from the box twice previous to your seeing it on the morning of the 18th. I took the utmost care to get the section to you in as fresh a state as possible. When you saw the section I remember distinctly that it was quite fresh and free from any signs of putrefaction. If I can be of any assistance to you in this case, please command me. With many happy returns of the past holiday season to you and yours.—Very respectfully,

"W. H. WRAY."

Now, in conclusion, I have simply to say that the American disease is not pleuro, but that it agrees in every respect with what Gamgee, Billings, and Nocard have described as broncho-pneumonia, and that it is identical—but the specimens show a more chronically diseased condition—with what I discovered in both States and Canadian cattle landed in Liverpool in 1879.

One other observation. I trust that this controversy will lead to good results; that veterinary surgeons will in future have greater faith in micro-

scopic investigations, as by such methods it has been proved that pleuro-pneumonia is a disease commencing in the perilobular tissue, and that catarrhal or broncho-pneumonia proceeds from the tubes and air cells, from which pus can be pressed out, and that its best result is seen to be a desquamation of the epithelium of the inflamed tubes; that in pleuro fibrin is exuded in abundance into the connective tissue, air vesicles, bronchioles, and blood vessels, where it coagulates into permanent clots; that pus is seldom or never found, and that in broncho-pneumonia this remarkable condition is absent.

Portions of the lung of the Deptford ox having been sent to Professor Nocard, of Alfort, the following is a translation of the letter he sends with reference to them:

"Alfort December 29th, 1891.

"My dear Colleague,—You will excuse my not having replied sooner, but I did not wish to limit myself only to an examination of the sections you sent me; for I was desirous of thoroughly studying the piece of lung you also forwarded This study I have now made comparatively, with pieces I myself collected at the commencement of this year or end of 1890 from American cattle, the history of which I brought before the Société Centrale Vétérinaire in July last, under the title of 'Infectious Broncho-Pneumonia.'

"I have made a great number of sections of your specimens and of my own, and have treated them by the same methods of staining, which I have varied as much as possible. I have examined them with much care, and I believe I am now in a position to conclude: 1. The lesion which you have submitted to me is certainly not that of pleuro-pneumonia; 2. it is a bacteridian broncho-pneumonia, which, *in all probability*, is of the same nature as that I have already described. On the latter point I am not so positive as on the first, for although the distribution is very analogous, and the microbes have the same form and the same dimensions, and react in the same way to the different staining methods, you know as well as I do that we cannot, on these alone, affirm the identity of two microbes. In order to do this we must cultivate your bacteria, and then study them comparatively with mine, to see how they behave in the different culture media, and observe their pathogenic action on various animals. By doing this I shall doubtless be able to affirm or deny that we are dealing with one and the same organism. However this may be, I again repeat that it appears probable to me that you and I have studied one and the same disease.

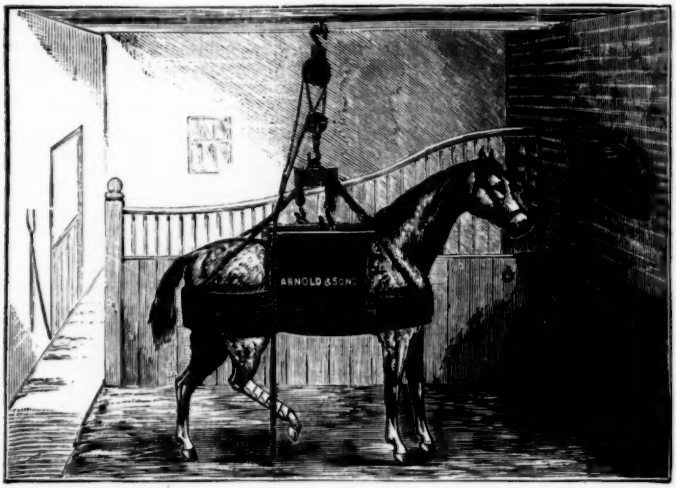
"E. Nocard."

EARTH WORMS AND TUBERCLE BACILLI.

In a communication presented to the Paris Academy of Sciences on January 25th, Lortet and Despeignes, after recalling the experiments by which Pasteur showed that earth worms often bring to the surface the spores of the anthrax bacterium from the earth in which animals that have died of that disease have been buried, said they had made experiments to ascertain whether these worms played a similar part in regard to the tubercle bacillus. They have satisfied themselves that earth worms may preserve within their bodies for several months, tubercle bacilli, which retain their vitality and virulence unimpaired. Lortet and Despeignes, therefore, believe that under certain circumstances the worms may be the means of disseminating the micro-organisms of tuberculosis. The authors claim that this is the first time the possibility of easy tuberculisation of an invertebrate animal has been experimentally demonstrated.

A NEW HORSE-SLING.

INVENTED BY JAMES MILLS, V.S. 1ST CLASS, A.V.D., SECUNDERABAD, DECCAN, INDIA.



I HAVE been experimenting for many years with the view of bringing into use a horse-sling which would combine *utility* with *comfort*. This has now been fairly well accomplished in the sling made from my model by Messrs. Arnold and Sons, Smithfield, London. It was invariably a source of anxiety with many of the old-fashioned slings to keep a horse in them for any length of time, as sores on various parts of the body were of frequent occurrence, which at once complicated a case; but with my sling such complications are reduced almost to an impossibility. The sling, it will be observed from the woodcut, consists of a cross-spring, longitudinal bar or support, breast-strap, breechin, belly-band or abdominal support, with a deferential pulley. Its advantages are: (1) It is simple and strong in construction; (2) practically noiseless; (3) not liable to get out of order; (4) takes up much less space than the old-pattern slings; (5) it at once secures absolute ease and comfort to the patient; (6) one man can raise or lower the patient without disturbing it; (7) the patient can be moved while in the sling as on a pivot; (8) it prevents galls or chafing, as the spring in which the horse rests is so constructed as to *give and take* with every movement; (9) there is no pressure on the withers or croup, as the breast-strap and breechin are supported by the longitudinal bar above the spring, thus keeping those parts clear and free from friction; (10) with it a horse can be slung in the open, to the branch of a tree, which is a great desideratum in a tropical climate. This sling obtained the Diploma of Merit at the Royal Military Exhibition, London, 1890.

THE ANTHRAX VIRUS AND TUBERCULOSIS.

PROFESSOR PERRONCITO, of the Turin Veterinary School, reports (*Gazz. degli Osp.*, January 21st, 1892) some observations on the influence of the anthrax virus on the development of tuberculosis. Taking as his starting point the observation, that in districts where protective inoculation against anthrax was largely adopted, there was a marked reduction in the number of cases of tuberculosis occurring among the cattle, he vaccinated two oxen against anthrax; then, having saturated them with virulent anthrax material, he inoculated them with tubercle. After two months the animals were still healthy, there being no development of tubercle even in the glands near the seat of inoculation. Taking next some cattle affected with tuberculosis, he vaccinated them with anthrax. After slaughtering them he found the tuberculous nodules to be sterile, in so far that they neither gave rise to growths when inoculated on culture media, nor did they produce tuberculosis when introduced into rabbits. Inoculations of anthrax virus, and subsequently of tuberculous material in rabbits, did not give such clear results. If the anthrax was feeble, the rabbits developed tuberculosis limited to the lymphatic glands corresponding to the point of inoculation; if the virus was strong, the animals died of anthrax.

OBSERVATIONS AND EXPERIMENTS ON "SYMBIOTIC OTACARIASIS" IN CARNIVORA.

BY MESSRS. RAILLIET AND CADIOT.

(Translated from the *Recueil de Medicine Vétérinaire*, 15th February, 1892, by E. F. de Jong, New Veterinary College, Edinburgh.)

ONE knows that a certain number of Acari have for their particular habitat the auricular concha and the external auditory meatus of animals. Such are, in particular, the *Psoroptes communis*, frequently observed in the rabbit, more rarely in the she-goat and gazelle, and the *Symbiotes auricularum*, which lives on the dog, the cat, and the ferret.

The affections caused by these parasites, and for which Neumann has recently proposed the name of *otacariasis*, are now sufficiently well-known in their manifestations—at all events, amongst certain animal species; but there still remain many points to be brought out concerning their transmission from one species to another.

One can even say as regards symbiotic acariasis in carnivora, that reports in this respect are entirely defective. This affection is, however, very much spread amongst ferrets; it is almost as common in the dog, but it has yet only been rarely observed in the cat.

Therefore, we believe, in order to elucidate some little of its history, the result of the different observations and experiments which have come under our notice, ought to be made known.

We would wish to increase these experiments, but, unfortunately, the scarcity of the materials necessary for study has forced us to limit them, and we look forward to a favourable opportunity in order to complete them.

Observations.

I. On the 24th of March, 1889, a proprietor of St. Maude presented to the College at Alfort, a very large Spanish cat, two years old, for advice. He declared that the animal had, for a year, been constantly scratching its ears

It was, however, never treated, but had its ears washed occasionally.

We observed in front and behind the concha, that the hair had fallen off, and there was slight redness, evidently due to the animal scratching.

Moreover, pruritus was manifested as soon as the organ was raised, in

order to examine the interior, the animal immediately scratching itself with great vigour.

In both ears was observed a great abundance of a brownish wax, accumulated particularly in the folds, and forming in places solid masses. When this substance was attempted to be removed, the cat scratched itself still more violently.

On the surface of the wax, small whitish spots were discovered by the naked eye, which on microscopic examination were recognised as auricular Symbiotes in every stage, accompanied with a sufficiently large proportion of eggs.

The treatment consisted in careful cleansing of the ear with lukewarm soapy water, and then by injections of a solution of sulphate of potash (1 in 20.) In less than eight hours the pruritus had disappeared, and on the 4th of April the cat was completely cured and returned to its owner.

II. Some time after, a doctor of Paris sent us the dead body of a young cat, which, after having eaten a herring that had been given to it by a servant, was suddenly taken with violent convulsions, and died in about a-quarter-of-an-hour.

It was thought that it had over-gorged itself with fish.

On *post-mortem* examination, there was no alteration of the abdominal or thoracic viscera. However, the examination of the ears showed the external auditory meatus to be filled with a ceruminous material of a variable consistence, and containing a great number of "Symbiotes auricularum." In both ears the cerumen formed a waxy nodule, blackish and rather hard towards the outside, greyish and soft in the middle, and purulent in the deepest part of the auditory meatus.

The *membrana tympani* was inflamed and injected at the periphery in the right ear, that of the left being infiltrated, softened, and on the point of being perforated; the lining of the auditory meatus, however, remained intact.

This observation shows that epileptic convulsions of auricular origin in the cat, as well as in the dog, are manifested independently of a direct stimulation of the sensory nerves of the ear, since the internal, and even the middle ear, remained unaltered. These affections, then, ought to be connected with the epilepsy of Brown-Séquard.

Experiments.

1. *Transmission of the Symbiotes auricularum from cat to cat.*—On the 28th of March, 1889, we deposited in both ears of a cat some cerumen which was taken from our first subject, and which contained numerous Symbiotes.

A month later, towards the end of April, the animal experimented upon began to frequently scratch itself upon the crown of its head, and sometimes even to roll in its cage.

On the 8th May we examined the ears, which contained a chocolate-coloured cerumen and in which we discovered two embryonic eggs of the Symbiotes.

The following months the irritation of the ear progressed very slowly. On the 21st July, another examination revealed a sufficiently abundant cerumen containing several Acari.

At last, in the latter months of the year of 1889, the pruritus became very intense; the animal scratched its ears incessantly, which were quite denuded of hair; it, however, became gradually weaker and lost its appetite. On the 5th February, 1890, it refused to eat, and finally succumbed during the night of the 6th and 7th. The autopsy revealed in the bottom of the external auditory meatus, which, however, did not appear sensibly altered, numerous Symbiotes moving about on the surface of a brownish, waxy mass. These Acari were still very active on the 10th February.

II. *Transmission from the Cat to the Dog.*—On 28th March, 1889, we

deposited in the ears of a brach-hound (Stop), some cerumen containing Symbiotes, which we obtained from the same cat that furnished us with material for the preceding experiment.

On the 15th May following, after having seen the dog scratch its ears on several occasions, we found the abundant cerumen to contain a nympha and a larva of Symbiotes.

Another examination made on the 21st July, gave us a negative result. But, curiously enough, having observed another brach-hound (Fox), companion of our subject of experiment, scratching its ears for some time, we found that there were present in the middle of the cerumen, which, however was not very abundant, numerous living Symbiotes.

The first subject (Stop), was unfortunately killed accidentally during our absence, so that we were unable to make an autopsy.

As regards Fox, there were Symbiotes present, even towards the end of 1890. But since then the pruritus has disappeared, and the dog is to-day in excellent health.

III. *Attempt at Transmission from Dog to Cat.*—On the 26th December, 1889, a gentleman brought to Alfort for advice a bull-terrier, which had been deaf for about six months, and which had frequently been scratching its ears so violently as to utter cries.

Both auditory meati were filled with a chocolate-coloured cerumen containing numerous Symbiotes. We immediately introduced some of this cerumen into the ears of a large black cat, bred in a cage; but we have never been able to find any Acari in this animal.

We ought, moreover, to add, that we were just as unsuccessful in trying to communicate to this subject, Symbiotes obtained from the cat which was the subject of our first experiment, and which died on the 7th February.

IV. *Attempts at Transmission from the Ferret to the Dog.*—On the 19th January, 1888, a game-keeper of Havre sent to us for *post-mortem* examination, the dead body of a ferret which had died shortly after its mate, and, like the latter, presented scabs in its ears.

But, moreover, nineteen dogs had died several weeks previously, and the owner blamed the ferrets for having transmitted the disease to them.

"I commenced, said he, by having just one dog taken ill, then two, until finally the disease spread rapidly throughout all my dogs. . . . They appeared to be suffering in the head, and turned themselves round as if giddy; they foamed at the mouth, howled, frequently micturated, and died. The keeper frequently kept the dogs shut up when they were young. But latterly, in order to sharpen the ferrets, he left them free in the same place in which the straw had not been changed. In my opinion, it was there the malady originated."

At the autopsy both ears of the ferret presented a very pronounced Symbiotic acariosis; thick scabs occupied the folds of the auricular concha, covering an intensely irritated surface; these scabs contained numerous living Symbiotes; the cerumen, which was in a mass in the auditory meatus, contained scarcely any.

It was very probable, after the symptoms reported by the owner, and after the result of this autopsy, that the disease that carried away the dogs was a Symbiotic acariasis transmitted to them by the ferrets.

In order to verify this hypothesis, we immediately deposited in the ears of a young brach-hound dog, numerous living Symbiotes of the ferret, both male and female, nymphæ and larvæ.

A fortnight later, there was no longer any trace of Acari in this dog.

We had already on the 3rd November, 1887, tried an analogous experiment on the same dog, without being any more successful, with Symbiotes obtained from living ferrets, which had been sent to us from Seine-et-Oise.

On the 25th February, 1888, we received two dead ferrets from the department of Loir-et-Cher; and both presented in the folds of the concha, scabs filled with very active Symbiotes. A large number of these Acari were deposited in the ears of two small dogs about six weeks old. In a few days, however, they disappeared.

The results of these experiments, together with those already obtained by M. Nocard on dogs, tend to show:—

I. That otacariasis is readily transmissible from an affected individual to healthy individuals of the same species;

II. That transmission is more difficult between the cat and dog;

III. That it does *not* take place between the ferret and dog;

These results are, moreover, in conformity with the morphological data we possess regarding Auricular Symbiotes.

Here is, indeed, a table which gives in micro-millimetres (*u*) the respective dimensions of the Symbiotes of the dog, cat and ferret.

SYMBIOTES CYNOTIS AURICULARUM.

	Var. Canis.		*Var. Cati.*		*Var. Furonis.*	
	Length.	Breadth.	Length.	Breadth.	Length.	Breadth.
Male	350-380	250-280	320-350	230-250	270-340	210-250
Egg-laying Female	460-530	280-350	430-480	260-290	380-450	240-280
Sexual Female ..	340-380	210-260	310-360	200-250	300-330	180-230
Egg	200-210	90-120	160-190	80-120	160-200	80-120

Now, if one compares the parasite of the dog with that of the cat, and that of the cat with that of the ferret, it will be observed that nearly all these dimensions overlap one another, so that certain species taken from the cat may be of the same size as others taken from the dog, and similarly with Symbiotes of the ferret and cat.

However, the differences in size between the parasite of the ferret and that of the dog, are always very distinct and well-marked.

According to this distinction, it is very easy to understand that the species proper to the cat could live on the dog, whilst that of the ferret ought only to very slightly accustom itself to its new habitat on that animal. It is probable, also, that transmission is possible from the ferret to the cat; but if we have neglected to experiment in this direction, it is on account of the relations between these animals being so slight, and, again, these observations of size having been ascertained too late.

IMPORTATION OF AMERICAN PORK INTO GERMANY.

ACCORDING to the *Zeitschrift für Fleisch-und-Milch Hygiene*, there were received at Stettin during 1891, 857 pieces of American pork, in seven of which trichinæ were found; at Neuss, of those examined 2 per cent. were found infested; at Dusseldorf, since the importation of this article was authorised, 66 pieces were found trichinous; at Dresden, of a quantity imported, two pieces were discovered to be infested, one of them very much so, while the certificate sent with them from America stated that the lot had been examined and were perfectly healthy.

THE PRESENCE OF CYSTICERCUS BOVIS IN CATTLE.

In 1890 the *Cysticercus bovis* was met with in the Berlin Abattoir much more frequently than in the previous year, being found in 390 animals (one being a calf), whereas, in 1889, only 277 animals were found infested. Hertwig, the veterinary inspector of the abattoir, found that the situation of the cysticerci in the bodies of the cattle was as follows :—

In the masseter muscles	in 316 instances.	
„ „ „ and heart ..	39	„
„ „ „ and brain ..	1	„
„ „ „ and tongue ..	4	„
„ cervical muscles	1	„
„ „ and tongue ..	1	„
„ tongue	2	„
„ „ and heart	2	„
„ muscles of thorax and tongue..	1	„
„ internal muscles	22	„

Excluding the 22 instances in which the parasites were found in the interior of the body, the following shows their proportional distribution in the external muscles :—

Masseter muscles, in 360 instances.		
Heart	41	„
Tongue	10	„
Cervical muscles .	3	„
Thoracic muscles .	1	„

From this it may be concluded that the masseter muscles are by far the most favourite habitat of the bovine cysticercus.

The stage at which the cysticerci were found varied from the earliest to the *completely developed, calcified,* and *dead* condition; and it is worthy of note that it was repeatedly observed that while the worm would be found in a young stage in one part, in another situation it was more fully developed. In similar instances the cyst was as long as a centimetre or more, and the hydatigenous membrane was thickened, and contained a greenish or yellowish powder, in which the body of the cysticercus was hidden.

TO CONTRIBUTORS.

Owing to pressure on our space, several Communications have to be held over until next month.

Obituary.

The following deaths have been reported :—

J. Tallontire, M.R.C.V.S., Skelton, Cumberland; received the Highland and Agricultural Society's certificate in 1863, and became an M.R.C.V.S. in 1880.

W. S. Wallis, F.R.C.V.S., who graduated in 1836, and practised at Halstead, Essex, where he was held in great esteem as an able professional gentleman, and one who took very much interest in local matters of a philanthropic and public character.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 27TH, 1892.

Veterinary-Colonel Lambert, C.B., President, in the Chair.

Present:—General Sir Fredk. Fitzwygram; Dr. Fleming, C.B.; Professor Penberthy; Veterinary-Captain Raymond; Messrs. Greaves, Hunting, Malcolm, Mason, Mulvey, Nisbet, Jas. F. Simpson, Trigger, Wheatley, Wragg; Mr. Thatcher, (Solicitor); and Mr. A. W. Hill (Secretary).

The SECRETARY read the notice convening the meeting.

On the motion of Dr. FLEMING, seconded by Mr. MASON, the minutes of the previous meeting were taken as read and confirmed.

Absentees.

The SECRETARY stated that he had received letters from the following gentlemen regretting their inability to attend the meeting:—Professors McCall and Williams; and Messrs. Barford, Burnett, Cartledge, Edgar, Fraser, Kidd, Taylor, and Whittle.

Presentations to the Library and Museum.

The SECRETARY announced the following presentations:—Statistical and General Report of the Army Veterinary Department from the President, and a specimen of a double canon-bone of an ox from Mr. F. Armstrong, of Accrington.

On the motion of Dr. FLEMING, seconded by Mr. TRIGGER, a vote of thanks was accorded to the donors.

The late Duke of Clarence and Avondale.

The SECRETARY stated that the following telegram had been sent to T.R.H. the Prince and Princess of Wales on the recent occasion of their sad bereavement:—"The President and Council of the Royal College of Veterinary Surgeons beg to offer their deepest sympathy to your Royal Highnesses in your most sad and distressing affliction. From the President and Council of the Royal College of Veterinary Surgeons."

To that the following reply had been received:—"The Prince and Princess thank you and Council for kind sympathy."

Report of the Joint Conference appointed by the Royal College of Veterinary Surgeons and the Royal Veterinary College to inquire into the Practical Examinations in December, 1890.

The SECRETARY read a letter from the examiners expressing satisfaction at the result of the conference.

The PRESIDENT said that every member of Council had received a copy of the report of the conference, and if no one wished to say anything about it the matter would there end.

On the motion of Mr. JAS. F. SIMPSON, seconded by Dr. FLEMING, a vote of thanks was accorded to those members of the conference who represented the Royal College of Veterinary Surgeons.

Notice of Motion by Mr. Kidd.

The SECRETARY read a letter from Mr. Kidd containing the following notice of motion: That steps be taken by this Council to ascertain whether those persons whose names appear in the 'List of Existing Practitioners under the Veterinary Surgeons' Act, 1881,' have the right to use the title of Veterinary Surgeons."

The SECRETARY read a letter from a student stating that he had been rejected twice at his practical examination, and wanting to know whether the time of his rejection dated from the last rejection or from the time of his having been rejected at the early examination.

The SOLICITOR said the question was whether the Bye-law meant three years from the date of the first rejection, or whether each rejection constituted a further lease. He thought it constituted a further lease.

The Council decided that students should come up within three years of the time of their last rejection.

The SECRETARY read a letter from Mr. Stevens, of Darlington, stating that information had been supplied by the Inland Revenue Department, from which it appeared that veterinary surgeons could no longer use methylated spirits in their prescriptions.

The SOLICITOR said he had looked into the Methylated Spirits Act, and it did not seem to him to apply to veterinary surgeons.

Dr. FLEMING said he thought it would be well for the College to get opinion upon the subject, and he would move that the Solicitor be instructed to take counsel's opinion, because it was an important matter to veterinary surgeons.

Mr. HUNTING moved as an amendment, "That before taking counsel's opinion the College should communicate with the Inland Revenue."

Mr. J. F. SIMPSON seconded the amendment, which was agreed to.

Royal Agricultural Society's Prizes.

The SECRETARY said that the Examiners in Cattle Pathology had awarded the prizes of the Agricultural Society to Mr. G. H. Williams and Mr. M. T. Saddler.

Finance Committee.

The SECRETARY read the report of the Finance Committee.

Mr. WRAGG moved, "That the report of the Finance Committee be received and adopted; and that the Treasurer be authorised to draw cheques for the amount of the liabilities."

Mr. MASON seconded the motion, which was agreed to.

Registration Committee.

The SECRETARY read the report, which stated that a Mr. Baker had been struck off the register, and gave the names of several persons who had been threatened with prosecution for using the word "veterinary," and for using letters after their names implying that they were members of the College.

The report was adopted.

On the motion of Mr. MULVEY it was resolved that the seal of the College be attached to the prosecutions recommended by the Registration Committee.

Library and Museum Committee.

The SECRETARY read the report, which suggested that a sum of £200 should be expended on the purchase of models, and £20 for a series of photographs of animal locomotion.

Mr. HUNTING moved that a sum not exceeding £20 be expended on the purchase of models for examination purposes.

Mr. TRIGGER seconded the motion.

The motion was then put and agreed to, and the report as amended was adopted.

Report of the Court of Examiners (England and Scotland).

The SECRETARY stated that a meeting of the Court of Examiners had been held in London, and that for the final twenty-six students had passed and eighteen had been rejected. The examiners for the Classes B and C, Oral,

had no special feature to report to the Council; but with regard to the practical section the examiners had reported as follows:—"The practical section of your Board of Examiners—Class C—have to report that at the December examinations held in London, Edinburgh, and Glasgow, we were supplied with all the subjects for examination purposes for which we had applied through the respective secretaries, and that in each place every facility was given us to conduct the examinations on the lines which we suggested subsequent to the May examinations; and we also, in accordance with the minutes of the Royal College of Veterinary Surgeons supplied to us, gave to each student the additional time which we then said we considered necessary, both in the interest of the student and the profession, viz., half-an-hour to each student by every examiner separately. This time in reality was considerably exceeded by an examiner having more than student engaged at the same time, and so giving the student additional opportunity of carefully examining the horses, &c. Nominally the time is divided by each student (with the horse examiners) having twenty minutes with each examiner, the remaining twenty minutes being spent in operating upon dead limbs, &c. The cattle examiners also gave twenty minutes to each student, the remaining twenty minutes being used for dispensing, writing prescriptions, &c. In London and Glasgow the whole examination was conducted under one roof and at the same time, which is most convenient. In Edinburgh the examinations were conducted as before, except that we had to go to the New College for operating, dispensing, &c. In Scotland your Secretary considered that the recent minute of Council intended that half-an-hour should be given to each subject, and not to each examiner. This had been differently read by us and in London, so we decided that we must conduct a uniform examination at each place, and did so; if half-an-hour to each subject was intended no minute was necessary, as that time had always been given, and was considered by us inadequate; hence our suggestion for increased time, and, as we believed, the acquiescence of the Council." The report further stated that examinations had been held in Edinburgh and Glasgow; that in the final examination at New College 14 students had passed and 3 rejected; at Dick College 10 passed and 10 rejected; and at Glasgow College 10 passed and 8 rejected.

The SECRETARY read a communication from Mr. Rutherford, in which he stated:—"In Class C, Practical, all the examiners were present; but there are several things in connection with this examination that I desire to draw your attention to. As to the time occupied:—In your communication to me on this subject, I am informed that 'the recommendation that the minimum time be limited to not less than half an hour for each subject at the Final Practical Examination.' This communication I read to the Practical Examiners on their assembling, but they declined to accept the instruction as it stands, and on their own responsibility interpreted it to mean, 'that each student should be examined on each subject *by each examiner* for not less than half an hour.' You will observe that the addition by these gentlemen of the words *by each examiner*, is a direct transverse of the instructions given by you to me, and by me read to them; indeed, there is such a difference between the two interpretations, and the cost incurred is necessarily so much greater, that I beg you will be good enough to ascertain from the President and Council whether the instruction is to read as it stands—or as interpreted by the examiners. The cost of the practical examination:—Up till this last examination, or at any rate up to the time of the resignation of Mr. Cartledge and Sir Henry Simpson, the practical examination was paid for at the rate of £1 1s. per hour to each examiner, during which time the students were supposed to have passed through hands, or, in in other words, the examination of say twelve students (practically) cost the College £3 3s. to each of four examiners, or £12 12s. altogether. At the examination just concluded, the cost to the College, by the

way the time to be occupied was read, and at the rate of £1 1s. an hour to each examiner, has been for twelve students £6 6s. to each of the examiners, or £25 4s. altogether, irrespective of the extra charges for heads, legs, drugs, extra horses, cattle, &c. I am particular in drawing your attention to this matter, because I find the C examination, Oral and Practical, is being conducted at a loss to the College. The following statement (roughly) of the receipts and disbursements in connection with them will illustrate what I mean. Take this last examination. We received in fees for the oral and practical examinations from seventy-one students £250 19s. The cost of examining them in examiners' fees, rail expenses, and charges at practical, irrespective of any share of general expenses, was £301 10s. at least—a loss of about £50."

Mr. MULVEY said he had, on several occasions, taken the opportunity of attending the examinations, both at Camden Town and Red Lion Square, and he could only say that he considered they were conducted in a fair way to test the abilities of the students. There were one or two things, however, which he noticed at the last examination which he thought seemed calculated to occupy more time than was absolutely necessary. In his opinion, the practical examination trenched somewhat upon the duties of the examiners at Red Lion Square. For instance, a student examined a horse. The examiner asked him to point out the seat of corn, splints or spavin, and then to describe what spavin was—a subject which had already been dealt with by the examiners at Red Lion Square. He thought it was not the intention of the Council when it appointed the examiners on practical subjects, that those questions should be gone over twice, first at Red Lion Square by the Examiners on Horse and Cattle Pathology, and then again at Camden Town. That might account to a very great extent for a good deal of time that was spent in the examinations. He also noted another thing. When the last examiners were appointed, it was settled that there should be two examiners for each subject, but he noticed at Camden Town that one of the practical examiners on cattle was examining students on how to make up horse-balls and powders, and writing out prescriptions for horses. It was scarcely the thing for an examiner in cattle to go into, as it was a subject for which he was not appointed. He thought it was the intention of the Council, in order to avoid all appearance of unfairness, that there should be two examiners at each table, or at each time the students were examined.

Mr. TRIGGER said there appeared to be a great deal of doubt as to whether the examinations were conducted on exactly the right lines at the present time. If, as Mr. Mulvey had said, the student was examined twice over on the same subject, it was evidently an injustice—he did not mean an intentional injustice. After a student had been examined at Red Lion Square, he had a right to suppose that his examination was done with, and that any mistakes he might afterwards make should not count against him. In his opinion the examinations were, to a certain extent, more or less fluky. He would ask any professor—Professor Penberthy, for instance—if, under the present system of examination, he could put his hand on ten men in his college who would be quite certain of obtaining their diplomas. He thought there should be no doubt that good men should not be plucked, and it should be as impossible to reject a good man as it was to pass a bad one. But was that so? and if not, where did the fault lie? If the students were not taught up to the lines on which they were examined, or were not examined on pretty much the same lines on which they were taught, it was absolutely necessary that there should be some conference between the examiners, the teachers of schools, and the Council, and that rules should be laid down for the guidance of examiners. In his opinion the teaching and the examining staff should be on the same level. If they were going in for new schemes to increase the standard, the

must first of all see that they had a perfect system of examination to commence with, and then when they had got that he thought they would be justified in going on on the lines indicated by the Council at the present time. He would move, "That the Examination Sub-committee be requested to confer with the principals of schools and examiners for the purpose of investigating the present system of examinations, and report thereon to the Council."

Mr. MULVEY seconded the motion.

Dr. FLEMING said that he had been an examiner for a great number of years on almost all subjects, and he could not see, as far as his section was concerned, that there had been any difference in the mode of examination, and it was not very difficult to ascertain whether the student was good or not. He had every reason to believe that good students were not rejected, and that bad ones were.

Mr. J. F. SIMPSON said that there were always a great number of chronics among the candidates for the Christmas examinations; in fact, he should think that 75 per cent. of them were rejected men, and had been rejected over and over again.

Professor PENBERTHY said that if he were asked whether he could put his finger on any ten men who were certain to pass, or any 10 per cent. of men, he must distinctly say that he could not. He naturally thought the teaching of these men, at any rate, was not at fault, but that the method of examining was. That harmony of thought, as to what was requisite, did not exist; it might be brought about by the result of the consultation of the principals of schools, the examining committee, and the examiners together. That, in his opinion, arose from the fact that the examiners had never had any definite instructions from the Council upon what to examine, and that the examination was now divided into theoretical, oral, and practical, and that several lots of examiners, who held different views, examined the students. Instead of having the views of two men to deal with, the students, as Mr. Mulvey has said, had the views of three separate men to deal with. He thought the Council was bound to instruct the examiners definitely, and he thought they had committed a grave error in splitting up the examinations into practical and theoretical. Under the present system of examination he had no feeling of certainty in saying that men would pass—not even the best men. He was thoroughly convinced that the increase of failures was due to the demand which was put on the student by increasing the number of examiners on the same subject, and the examiners not being as definitely instructed as they should be. If definite instructions were laid down, as he believed they would be, by the Council, following the suggestions of the Committee, the teachers would know what to teach and the students what to learn.

Dr. FLEMING said he thought he could account for the larger number of rejections which there had recently been by the fact that all students, at Camden Town, at any rate—he did not know about the Scotch schools—were allowed to go up for examinations, whereas in the old days only those who had attended a certain course of lectures and had been rigidly looked after, and whom the Principal could certify were fit, were allowed to go up. At the present time he believed there was no prohibition whatever against students going up for examinations.

Mr. J. F. SIMPSON asked whether the Christmas candidates were worse than others?

Dr. FLEMING: Yes, they are.

Professor PENBERTHY said that Christmas examinations undoubtedly were not a fair criterion. He attached great importance to Dr. Fleming's statement as to the non-restriction of candidates entering for examination. The Preliminary Examination at Camden Town was dreaded far more than the examination at Red Lion Square. The general idea was—"If I can get

through the Preliminary, I can manage at the Square." If the examiners on the examinations were at fault, he certainly thought some amendment ought to be made. If the Council could demand a certain amount of attendance at the schools, it should certainly do so, and not leave it to the Principals or to anybody else.

Captain RAYMOND said that Mr. Mulvey had spoken of the way in which examinations were conducted. He thought the feature mentioned by that gentleman was due to the fact that the practical examiners were anxious to get as much work out of the students in the time allotted as possible, and, therefore, one examiner would take a student on a subject apart from the oral. He also noticed the overlapping of the subjects in the oral and the practical examinations. With regard to any complaints that students might bring as to the way in which the examinations were conducted, of course the Council could bring preventives to bear. They could move a resolution that one or two of their members should attend the examiners regularly, that complaints should be made in a formal manner, and if not made within a certain period after the examination should be ignored. With regard to the great number of rejections, he was bound to say that from what he had noticed it was a fact that, if a student gave the examiner a common-sense view, even though the examiner could not exactly agree in detail as to the treatment of the case, the man was not rejected.

Mr. HUNTING said he would support Mr. Trigger's proposition that there should be an inquiry into the subject, because nobody appeared to know what was really wrong. Until they knew whether there was anything wrong, because that even was a debatable point, they could not alter it. It was certainly not fair that overlapping should occur. If a man was examined on the nature, causes and symptoms of a disease by his so-called theoretical examiner, and then taken over the same ground by the practical examiner, most likely he would make a mistake somewhere, because no two men would exactly agree. There was only one way of altering that, namely, that in the final examination the same men should examine on the principles as examined on the practice of medicine and surgery. It would be noticed that on the Examining Board—he did not say it with any disrespect to the examiners, but simply as noting a fact—very few of the examiners had been teachers. The result of that was a want of uniformity of standard as between the examiners and the teachers. The teachers treated the subject in one way, and to a certain length, while the examiners might treat it in quite a different way. What was wanted was some sort of conference between the teachers and examiners, or, what would be still better, a pretty full syllabus of a subject, showing where the teacher and examiner should commence and finish.

The PRESIDENT said that Mr. Trigger's motion was as follows:—"That the Examination Sub-committee be requested to confer with the principals of colleges and examiners, and any others they might think necessary, to investigate fully the present system of the examination, and report thereon to the Examination Committee."

Mr. J. F. SIMPSON asked whether the Council was going to pass that resolution simply on account of the overlapping? He thought the difficulty could be got over by giving instructions to examiners to avoid as much as possible the system of over-lapping. With regard to asking questions on spavin, spoken of by Mr. Mulvey, if a horse was brought before the practical examiner, and the student was asked what defect existed in the hock, and answered "spavin," surely the examiner might ask what spavin was.

Mr. MULVEY said that what he meant was, that practical examiners should not go into the pathology of the subject, which had been already dealt with by the examiners at Red Lion Square.

Dr. FLEMING thought that, instead of a conference being held, the simpler

way would be for those gentlemen who considered the examinations were not properly conducted to attend them. They could then satisfy themselves as to what was wrong.

Mr. J. F. SIMPSON said that the majority of the Sub-committee were then present, and no doubt they would take any hints which might be thrown out.

The PRESIDENT asked Mr. Trigger if there was any necessity for his motion being brought forward?

Mr. TRIGGER said that his resolution simply requested the Sub-committee to consider a particular point. It was no reflection upon any one.

The PRESIDENT said that, as Chairman of the Sub-committee, he was sure they would do all that was desired.

Mr. TRIGGER said that was all that was wanted.

Mr. MALCOLM said he thought the question of time ought to be settled.

The SOLICITOR said that in his opinion the time was limited to the subject, not to the examiner.

Mr. J. F. SIMPSON said in that case no alteration had been made, because every student had a quarter-of-an-hour before, and that was what he would have now. The student had always had half-an-hour with his cattle examiners, he was then passed on to his horse examiners, and the same thing took place there. If the examiners interpreted the wishes of the Council that each student should be examined by each examiner for half-an-hour, there would be a very expensive bill to pay. If Mr. Thatcher's interpretation was correct, they had made no alteration.

Mr. HUNTING said they put a minimum of half-an-hour for each subject.

Mr. J. F. SIMPSON said that no student ever had less than half-an-hour.

Mr. HUNTING said that they had been told that in some cases the student was dismissed in five minutes.

Mr. J. F. SIMPSON: That was disproved.

Mr. HUNTING said that he himself saw one examiner standing in a loose box with a cow, while the other two examiners were separately engaged with two other students on the horse, and a fourth man was superintending the manufacture of horse-balls.

Dr. FLEMING said he would move that instructions be given to the practical examiners to confine themselves to the time allowed, as approved by the Council, and that Mr. Rutherford, the Secretary for Scotland, be informed of the construction which Mr. Thatcher puts upon the reading of the Bye-law—half-an-hour for each subject.

Mr. MULVEY contended that there was already a resolution that two examiners should officiate with the student, and should not examine him separately, and also should not examine him on separate subjects.

Mr. J. F. SIMPSON said the examiners had reported that the time allowed them was insufficient. The time allowed was a quarter-of-an-hour to each student, and now they had placed, to his mind, a very proper interpretation upon the Bye-law, and had extended the time by as much again.

The SOLICITOR said it was many years ago since the first resolution was passed—January, 1883—"That the time of the final examination be not less than a quarter-of-an-hour." No resolution to the same effect was passed until October, 1891, when the minimum time was fixed at half-an-hour for each subject.

Captain RAYMOND thought it would be a good thing to give a little more time than half-an-hour for practical examinations. Perhaps the money could be saved by cutting down the fees of the examiners.

Mr. J. F. SIMPSON thought the case might be met if instructions were given to the examiners to examine together in the same box. Then the student would have his half-hour on a subject in the presence of both examiners. He

would move—"That at the practical section of the C examination each student shall be examined by two examiners conjointly on each subject for half-an-hour."

Professor PENBERTHY seconded the motion, which was agreed to.

Proposed Alteration of and Addition to Bye-law No. 20.

Mr. MULVEY gave the following notice of motion :—"To substitute three years for five years as the term of office as examiner, and to add at the end of the Bye-law the following words :—'Every candidate for the office of examiner must be nominated in writing to the Secretary at least fourteen days before the election takes place, and the names of candidates with their qualifications must appear on the circular convening the meeting at which they are to be appointed.'"

The Solicitor's Report as to Resolutions of Council at present in force.

The SOLICITOR read his report, which stated that he had grouped the resolutions at present in force under such sections of the Act, bye-laws, and regulations to which they appeared to have special reference.

On the motion of Mr. TRIGGER, seconded by Mr. HUNTING, it was resolved :—"That fifty copies of the Solicitor's report be printed and circulated among the members of the Council."

Fellowship Examination.

On the motion of Mr. MULVEY, seconded by Mr. MASON, the report of the Court of Examiners for the Fellowship Degree was taken as read and adopted.

Obituary List.

The SECRETARY read the obituary list.

On the motion of Mr. MALCOLM, seconded by Mr. MULVEY, the Council resolved to send a letter of condolence to Mrs. Blakeway; and on the motion of Mr. TRIGGER, seconded by Mr. WRAGG, it was further resolved to send a letter of sympathy to Mr. Barford in his affliction.

SPECIAL MEETING.

At the close of the foregoing meeting, a special meeting of the Council was held to consider the following notice of motion by Mr. HUNTING :—"To add the word 'annually' to Bye-law 17 after the word 'elect.'"

Mr. HUNTING, in proposing the motion, briefly explained the reasons for the alteration.

Professor PENBERTHY seconded the motion, which was agreed to.

Mr. MULVEY moved, and Mr. MASON seconded, a hearty vote of thanks to the President, which was carried unanimously.

SPECIAL MEETING OF COUNCIL, HELD FEBRUARY 9TH.

Veterinary-Colonel Lambert, President, in the chair.

Present:—General Sir Frederick Fitzwygram; Professor Penberthy; Messrs. W. Hunting, W. J. Mulvey, J. F. Simpson, A. Wheatley; Veterinary-Captain Raymond; Mr. A. W. Hill (Secretary); and Mr. G. Thatcher (Solicitor).

The SECRETARY read the notice convening the meeting.

The minutes of the previous special meeting of the Council were read and confirmed.

The SECRETARY said he had received letters from Messrs. Taylor, Edgar, Mason, and Barford regretting their inability to attend the meeting.

The SECRETARY read a letter from Mr. Barford expressing his sincere thanks for the kind expressions of sympathy the Council had passed at their last meeting.

Mr. W. HUNTING moved that the resolution—"To add the word 'annually' to Bye-law 17, after the word 'elect'"—passed at the previous meeting be confirmed.

Mr. MULVEY seconded the motion, which was agreed to.

A vote of thanks to the President concluded the business.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN Ordinary General Meeting of the Central Veterinary Medical Society was held at the Royal College of Veterinary Surgeons, Red Lion Square, Holborn, on January 3rd, 1892, at 7 p.m., the President, Mr. W. Roots, in the chair.

There were present the following Fellows:—Messrs. A. Broad, W. F. Barrett, H. W. Caton, J. A. W. Dollar, Lieut-Col. Duck, W. Hunting, A. E. Gosling, Capt. Glover, F. C. Mahon, P. McOnie, Prof. Penberthy, W. Roots, Capt. Raymond, H. G. Rogers, J. E. Rickards, G. Reddish, J. Rowe, S. Villar, W. Willis, and W. Wright. The visitors present were Prof. Macqueen, Messrs. Morgan Evans, and R. E. Johnstone.

Mr. H. G. ROGERS, the Secretary, read letters from Prof. Pritchard, Mr. Wheatley, Mr. Hurndall and others regretting their inability to attend. He afterwards read a letter from Mr. Woodger, the Treasurer, who asked the Secretary to express to the Fellows his sincere thanks for their kind vote to him in his great loss. He would be unable to attend the meetings as frequently as in the past, and having held his office for greater part of the time the Society had been in existence, it would be as well if someone else took over the duties. He begged to tender his resignation, as it would be impossible or him to give sufficient time to the work.

Mr. A. BROAD said he feared it would be useless to ask Mr. Woodger to reconsider his determination. He was sure he was not one to write in the way he had unless he had thoroughly made up his mind. He proposed that the resignation should be accepted with very great regret.

Mr. VILLAR seconded the proposition, and in doing so remarked that he had worked with him for four years, and was certain they would have a great difficulty in finding a man who would do the work as well as Mr. Woodger.

The proposition was carried unanimously.

Mr. R. C. IRVING, F.R.C.V.S., was next unanimously elected a Fellow of the Society.

The PRESIDENT then called upon Mr. Caton to speak as to some morbid specimens that he had brought.

Mr. CATON said he had brought a couple of bones. One was the case of the dislocation of the femur of a big cart horse, 16 years of age. He got his leg over the halter rein. The horse was put in slings for his inspection. He found the horse could not bear his weight on that leg alone. On placing his ear to the horse's thigh he could hear slight crepitation. He ordered the animal to be destroyed, and this was the result. A large portion of this bone was worn away, and yet all took place under the 24 hours. His next was the case of a horse that was at work on the day it was killed. Here they would see an ossification of the flexor brachii. He knew nothing about the animal, having examined it for the Insurance Company. The animal got down and could not rise again.

Mr. ROGERS, referring to the first case, said it was of some interest, because they would remember Mr. Willis bringing a fracture of the first rib before them. There was a small amount of polishing shown, and it was rather doubted that it took place in the time named. If they examined the femur

before them, they would find that a great deal more polishing had gone on in 24 hours. The compact tissue had been broken through, and the cancellated tissue considerably encroached upon.

Mr. BROAD thought the specimen important, as showing the amount of damage that could be done by attrition in 24 hours.

Prof. PENBERTHY said he remembered the specimen their Secretary had referred to. He held the view and expressed it then that the polishing took "longer time than that which the case seemed to point to." Now, here they had a different state of affairs. There was more damage, and this was what he should expect to see. They had not the ossification and polishing they had in the other two bones. In this case he should expect it to be worn away rather than polished.

The SECRETARY said the edge of the acetabulum seemed to show a considerable amount of wear, as well as the loose tissue at the head of the femur.

Prof. PENBERTHY said the polish was absent here, and went to prove the length of time the case had existed.

After a few more general remarks

The PRESIDENT called upon Prof. Penberthy to reopen the discussion on Mr. Villar's paper, "Glanders and Farcy, its Suppression."

Prof. PENBERTHY said it was like presumption on his part to reopen the discussion which he had not had an opportunity of hearing, but he gave way to the superior judgment of their Secretary and agreed to do it. For the reason he had just named he could not go so fully into the matter as he should like to. He must say here that it afforded him a great deal of pleasure to read Mr. Villar's paper and to notice the lucid and masterly manner in which the matter was brought forward. The importance of the subject to metropolitan practitioners could not possibly be over-rated. It seemed to him that London practitioners should take decided action on the point. They should not treat it merely as a matter of discussion but try to force it home in a practical way. As far as he could gather there did not seem to be unanimity of opinion as to the relation of farcy to glanders. Could a farcied horse propagate glanders? If so the horse should be treated as though suffering from so-called glanders. That was the point they must immediately emphasise their opinions on. Until they had a definite opinion on that point it was hardly competent for them to go on to discuss a means of preventing or suppressing it. It was his opinion that they were one disease with different manifestations. Then coming to some other minor points—he thought it was essential they should determine how glanders was propagated. It was stated somewhere that glanders was very rarely propagated by introducing the virus into the respiratory membrane. His opinion was not so. He had experimentally produced glanders by drying the virus and injecting it into the trachea. If the cells could not throw the virus off they would have glanders as a result. That glanders could be propagated through the alimentary canal was open to question. He thought the essayist mentioned that other poisons were ordinarily developed in different parts of the body. They found that they could trace in a large number of cases the manifestation of the virus from the intestines or from the stomach to the mesenteric glands and to the lungs, and to different parts of the body where their last resting-place may be. This they very rarely found in glanders. He had only seen one case of ulceration of the intestines, and had never found anything in any of the glands. He did not say that such cases did not exist. Probably they did. They were all agreed that by inoculation glanders could be propagated. It was essential that they should thoroughly understand the manner in which the disease might be propagated before they could suppress it. If they were agreed on those points which he

thought were essential from a professional point of view, they would have to look to their present means of preventing the disease, and see whether they were perfect. He thought it was clear that they were imperfect and that the delay in slaughtering was fatal to the proper working of the Act as it stood. At present the animal could be kept after it was known to be glandered for a certain time, and in this manner the germs of a disease were distributed. They would all agree that the present law was imperfect and incapable of dealing with the disease—consequently it was for them to suggest to the authorities a means for exterminating the disease. That there was a call for this the returns of the present year would show. In the year 1891 glanders-farcy gave a total of 1357, whereas in 1890 the total was 957, which was something like an increase of 15 per cent. This in itself was sufficient to draw their attention to the matter. He thought they were agreed that this disease should be tackled in London. The matter of compensation was one calling for very serious consideration. Figures as to cost had been gone into by Mr. Hunting, Mr. Villar and Mr. Dollar. He thought the turning point of Mr. Dollar's opposition to compensation was the failure of compensation to eradicate pleuro-pneumonia. He thought Mr. Dollar had based his opinion on reports dated back 1884-1890, when the measure was thoroughly permissive, when it was put into the hands of local authorities to carry out in a tinkering kind of way. But what was the present state of affairs? They knew that with regard to the carrying out of the slaughtering by the central Government for pleuro-pneumonia that they were in such a position that day as they never had been in before. He was afraid, therefore, that he could not agree with his friend Mr. Dollar on that point. He was indebted to his friend Mr. Hunting for the statement that before it was carried out by the central authorities there were 46 outbreaks reported per month, whereas since then the number of outbreaks had fallen to seven per month; this clearly proved that the central authorities could deal in an effective manner with preventable disease. And he held that if ever there was a preventable disease it was glanders. He thought they might adduce this from figures he held in his hand. They had outbreaks 155 in the first quarter, and cases 275, and in the second quarter outbreaks 177 and cases 341, so that usually when they had an outbreak of glanders there was something connected with it when dealt with by the authorities which limited it to an average of two animals to each outbreak. In his opinion if this matter were followed up it could be dealt with more easily than in the case of pleuro-pneumonia. His idea was that a staff of inspectors should be appointed for a time not to be limited to three years or to 12 years. It was absolutely essential that they should be veterinary surgeons, and they should have similar powers to those given to the inspectors under the other Act. They should be allowed to scour the country and hunt down every case. With regard to the manner of compensating, he really did not think this association had anything to do with that. If he were the legislature, this would be his opinion—that all animals held as property were only valuable as the law made that property valuable. If a man bought a horse for £50 knowing that it was liable to be glandered, a horse that would be worth otherwise £65, they must not give that man £15 because he has his horse killed. They must not compensate a man who had a glandered horse. There was no reason why compensation should not be paid where animals were killed by order of the inspectors as suspicious. The amount of that could be arrived at at the horse coroner's inquests. One gentleman had suggested that horses that had been in contact with infected animals should be branded in some way and be allowed to work. He must go back to his original assertion about the ability of farcied horses to distribute the germs of the disease. He had seen nothing as to drinking

troughs distributing the virus of glanders. The water at a summer temperature does not immediately kill the glander bacillus, and when a horse came thirsty and dived part of his head into the drinking trough, it was natural that the mucus should adhere to the schneiderian membrane, and that the animal should occasionally swallow the virus which was in the mucus. He was afraid his remarks had been rather rambling, but he had tried to speak on two or three points which he thought it was essential for them to emphasise. They must throw the onus on their Secretary, whose general good judgment simply allowed him to let his name stand as the opener of that evening's discussions which he believed should be extremely interesting and which he believed would, if driven home, be effective. Prof. Penberthy afterwards rose and said that at Camden Town they passed a resolution on November 5th, 1890, that a letter should be sent to Mr. Chaplin, but acting on the suggestion of their Principal, who knew a great deal about the matter it was decided that it should stand on the books.

Mr. ROGERS said if they made a comparison between pleuro-pneumonia and glanders, they should take into consideration that the latter disease was much more centralised, and it was fair to infer that it spread eccentrically. If they were able to stamp out the disease in its centres, it would disappear from the surroundings. When they examined the condition of England and Scotland with regard to the outbreak of 1890, there appeared to be three great centres, London, Glasgow and Liverpool. One might almost regard as a farce the inspection of the slaughter-houses of the Metropolis. The inspector walked in—occasionally he saw the animals, and sometimes he did not. The inspections should not be of such a slip-shod nature, and any measure framed ought to take into consideration the official inspection of these slaughter-houses through which all the carcases passed. The previous discussion seemed to turn very much on compensation or no compensation. He fully recognised compensation as a valuable factor in suppressing the disease, and with compensation the owner would report instead of hiding cases of disease. But he did not attach so much importance to it as some appeared to do. It was simply one possible help in suppressing the disease. There were many others. He thought more efficient inspection would have quite as much to do with suppression as any scheme relying upon compensation. He would advocate mapping out the Metropolis into a certain number of districts, and appointing inspectors at salaries that would enable them to do without private practice; letting them be inspectors pure and simple.

Mr. BROAD said, as to compensation, I would raise no great objection if only it were made small; there is no doubt much to be said in favour of the principle; on the other hand shrewd and practical horse-owners need no bribe to induce them to rid their stables of farcied or "suspicious" horses. One argument in favour of compensation, to my mind, is that it would enable supervision to be exercised over the stables; this should be the *quid pro quo* demanded in the interest of the ratepayers; for if there is one point needing attention in the endeavour to stamp out glanders in its London home, it is the complete renovation of many of the old stables where case after case of glanders has occurred till the soil is impregnated with poison. As London cowsheds are licensed and supervised, so should be the stables of cab and omnibus horses. As to the most common mode of contagion, my impression is that it is through the respiratory tract more than the alimentary; it is true that nose-bags are often a factor in the spread of disease, but here the germs may be inhaled rather than taken by the mouth. I have not the dread of water troughs which is so general, though it is difficult to adduce evidence; but the disease is chiefly met with among cab and 'bus horses, and if troughs were so fatal, I would expect it to be much more widely disseminated. Returning to the question of compensation, I would not sanction any dis-

tinction being made between farcy and glanders; neither on this point nor any other would I make the slightest difference in treatment between them; they are one and the same disease, there should be no doubt on this question.

Mr. BARRETT, in the course of his remarks, said he was convinced that hundreds of horses were affected with glanders and farcy, and that the advent of some depreciating influence was sufficient to awaken the germ. He should like to make one or two observations on the propagation of glanders. No doubt glanders was mostly propagated by water-troughs, for this reason. Perhaps in a stud of horses there is one acute case of glanders, and no other animal is affected. The question came, how could that animal receive the disease except by drinking? If water-troughs were abolished, glanders and farcy would be much less frequent. The increase of mortality in 1891 was doubtless due to the wide prevalence of influenza. As a result of that, glanders, in many cases, became developed in apparently healthy horses. That alone would account for the high record of cases in 1891. They could not stamp out the disease in London unless they resolved to slaughter, and here came in the question of compensation. In his opinion, the owner of the animal slaughtered should receive two-thirds the value of the horse before it was affected. If they slaughtered, they must take care that the animal did not affect others. He was opposed to the present mode of inspection in London. If they had a case of glanders they must call in a veterinary surgeon. Two or three days elapsed perhaps before they got his opinion. The animal was kept alive and allowed to affect others. This he would have altered by a quicker inspection and more rapid slaughter.

Mr. DOLLAR said he should like to make one or two remarks in the nature of a personal explanation. One or the foregoing speakers had referred to a suggestion of his, that those horses which had been associated with glandered or farcied animals should be branded in the foot and allowed to work. The objection made to that suggestion was that there would be a danger to the general body of animals. Of course, this suggestion was only a compromise. It rested on the recognition of the fact that it was quite impossible for them to tell in very many cases whether an animal was suffering from farcy or glanders, and the suggestion that those animals should be branded would merely result in their being readily recognised. It was only a slight provision to help the work of reporting and slaughtering. It was merely a portion of the system he would work in opposition to compensation. It seemed of all the speakers only one would recommend compensation of itself as a means of dealing with the disease; no one else went further than to suggest it as an auxiliary. The position he had taken up was not that they should absolutely do without compensation, but that they should try every other available means before resorting to it. If he were convinced that compensation was the only possible means of dealing with the disease, he should be only too happy to give his support to it; but he recognised that there might be many other methods which would cost the country much less, and which would be probably just as effectual.

Mr. VILLAR, in replying, referred first to Mr. Hunting's criticisms, and said he was pleased that they did not differ on any essential point. They seemed to differ, however, on the compensation question. They would perhaps remember that in his paper he advocated giving compensation for all animals compulsorily slaughtered, whether affected with farcy or glanders, or whether suspected. In Mr. Hunting's speech he said he was prepared to allow that the arguments were strong for including more than farcy in any compensation scheme. He took it that Mr. Hunting and himself were agreed on these points, and he took this opportunity of thanking him for the kind and courteous way in which he had opened the discussion on his (the speaker's) paper. Mr. Dollar confined his remarks almost entirely to the question of compensation,

to which he objected. But he did not see what his arguments had to do with the suppression of glanders. Mr. Dollar said that the giving of compensation had not eradicated pleuro-pneumonia, and that, therefore, it would not eradicate glanders. He could not bring himself to believe that Mr. Dollar seriously thought that during the last six years deaths from pleuro-pneumonia had increased by six times. It was well-known to all persons engaged in the cattle trade that pleuro-pneumonia during that time had decreased considerably, and it was due to the fact that compensation had been more liberal. Cowkeepers now almost invariably reported outbreaks of pleuro-pneumonia, but four years ago it was a general thing for them to hush cases up. That proved the advantage it would be to compensate in the case of glanders. Mr. Dollar made a suggestion that the hoofs of suspected horses should be branded, but sale would then become impossible, and probably it would be impossible to have the horses baited in livery yards, or shod at public forges. The owners would be put to serious disadvantage and loss. It would be a grand thing, but the owner would suffer for the good of others. He thought the owner should be compensated if they took such liberties with his stock. Mr. Dollar went into figures as to the expense that would be incurred by giving compensation; but he did not think it was quite necessary to go into those details, inasmuch as Mr. Hunting had at an early period of his speech withdrawn the remarks made in his book elsewhere. Mr. Dollar thought that veterinary surgeons should be obliged to report cases of glanders as soon as seen. He (the speaker) did not think so for a moment. It would be offering an additional inducement to horse owners to apply to unqualified men, or to treat horses themselves. The position of a veterinary surgeon towards his client was one of confidence. If they were to act a kind of spy, it would certainly make the profession unpopular. Mr. Samson had made the practical remark, that there were many low-class dealers in London who would be glad to buy glandered horses with the view of getting compensation. He (the speaker) looked upon this one difficulty as perhaps the chief. Professor Penberthy had given them some very interesting and important facts. They could not pay too much attention to the fact pointed out by Mr. Rogers, that the disease spread eccentrically. He was afraid two-thirds compensation suggested by Mr. Barrett would be too much to give. The value of a horse depended on its working powers. To give a large compensation would, he was afraid, only set low-class dealers to work. Mr. Barrett also pointed out that the veterinary surgeon should call in an inspector. Not at all. He must inform the owner that he must give notice to the police, and he could depend on it that the inspector would be there in a few hours. He had no further remarks to make. He should like, however, to thank them for the kind manner in which they had attended these meetings. It was a matter of pride to him that he had had the honour of introducing to their notice a subject which had drawn the largest attendance that had ever been held by the Central Veterinary Medical Society.

Mr. HUNTING then moved "That this meeting is of opinion that the present law concerning glanders and farcy is insufficient; that all cases both of glanders and farcy when detected should be slaughtered; that all suspicious cases should also be slaughtered, subject to compensation."

Prof. PENBERTHY seconded Mr. Hunting's resolution.

Mr. ROGERS thought the propositions should be put separately.

Mr. DOLLAR said the part as to compensation gave no clear idea. He could not support Mr. Hunting in compensating persons for the slaughter of suspicious cases, where those suspicious cases were proved to be suffering from glanders or farcy.

The resolution was then divided as under:—

Mr. HUNTING moved, and Prof. PENBERTHY seconded, "That the present law is insufficient." Carried.

Mr. HUNTING moved, and Prof. PENBERTHY seconded "That all cases both of glanders and farcy should be slaughtered without delay." Carried.

Mr. HUNTING moved "That suspicious cases should be slaughtered subject to compensation." He said this simply meant that if an inspector did not know what the case was, he should have the power to say "I will give you the value of the horse if you will have it killed."

Prof. PENBERTHY withdrew his support.

Mr. RICKARDS seconded the resolution.

Mr. DOLLAR moved as an amendment "That suspicious cases proving on *post-mortem* examination to be free from glanders or farcy be compensated for."

Prof. PENBERTHY seconded.

The amendment was lost.

The original resolution was carried.

Mr. HUNTING then moved "That in the opinion of this meeting compensation should be given for all cases which appear to be either of doubtful nature or possibly incurable." This he said would cover cases where farcy was so mild that it looked as if it might be cured even temporarily.

Mr. CATON seconded.

Mr. BARRETT thought the resolution absurd.

The resolution was lost by a large majority.

Mr. ROGERS then proposed a vote of thanks to Mr. VILLAR for his very able paper, which was seconded by Mr. DOLLAR, and carried unanimously.

Mr. RAYMOND next proposed a vote of thanks to Mr. CATON for his valuable specimens, which was seconded by Prof. PENBERTHY and also unanimously carried.

Prof. MACQUEEN was nominated for fellowship of the Society.

H. G. ROGERS, *Hon. Sec.*

At an Ordinary General Meeting held at the Royal College of Veterinary Surgeons, 10, Red Lion Square, on February 4th. The following Fellows were present:—Messrs. W. F. Barrett, J. A. W. Dollar, Veterinary-Lieut.-Col. Duck, Hy. Edgar, F. Elworthy, W. Hunting, J. S. Hurndall, Professor Macqueen, Professor Penberthy, W. Reid, W. Roots, H. G. Rogers, F. G. Samson, S. H. Slocock, Professor Shave, C. Sheather, E. A. West, A. Wheatley, W. Willis, W. N. Wright and J. Woodger.

Messrs. W. Pye, Chas. Rose and W. Rattee, were present as visitors.

Letters were read from Veterinary-Captain Matthews and Professor Walley regretting that they were unable to attend. A letter was read from Mr. W. N. Wright, which stated that he would be unable to introduce the subject of "Professional Etiquette," owing to the indifferent state of his health.

Professor Macqueen was unanimously elected a Fellow of the Society.

Veterinary-Captain RAYMOND read his paper on "General and Veterinary Education," as follows:—

Permit me to offer a few words as a preface to the subject which we are to discuss to-night. When our very energetic Hon. Secretary, Mr. Rogers, asked me to make some remarks to fill up any gap which might occur at the last meeting, I accepted his suggestion in order to get at your views upon a very important matter, which has been before the profession for some time. Fortunately the occasion did not arise; but still it has been decided that the question shall be brought before you. Since our last meeting, I have added to and altered some parts in order to bring the paper up to date as far as possible. I am afraid that these changes have converted the paper into a piece of literary patchwork, for which I claim your forbearance, in consideration of the fragmentary way in which my material has reached me.

There are two things to be discussed:—

1. The general preliminary education of the Student.
2. The present length and items of the curriculum.

Let us take the preliminary first. Our regulations enact the following:—

Part I.—Obligatory Subjects.

1. Reading aloud.
2. Writing from dictation.
3. English grammar, with parsing and composition.
4. Arithmetic—the simple and compound rules with vulgar and decimal fractions.
5. Either outlines of English history, or geography of Europe and the British Isles.
6. Latin—first and second books of Cæsar and either
   (*a*). French (no set book) or
   (*b*). German do.

Part II.—Optional Subjects.

1. Euclid—book I., or the subjects therein treated.
2. Algebra to quadratic equations.
3. Natural History: zoology, botany, physiology, (one branch only.)
4. Inorganic chemistry.
5. Mechanics.
6. Any of the specified foreign languages not taken as obligatory.

Let us now ascertain as far as possible what regulations our neighbours enforce.

Switzerland.

The Swiss preliminary enacts:—

1. Complete mastery of the language of the Canton where the candidate was born.
2. A fair acquaintance with one other of the national languages.
3. Latin—grammar, syntax, Cornelius Nepos, Cæsar.
4. History—General History of modern times and Swiss history.
5. Geography—Political and physical.
6. Arithmetic—up to square roots.
7. Algebra—Second grade equations with one unknown. Logarithms.
8. Geometry—Plane and solid. Trigonometry.
9. Physics—up to electricity and magnetism. Chemistry. The principal metals, &c., and their combinations.
10. Biology—Elements of botany and zoology.

Holland.

The Dutch preliminary includes:—

1. Dutch language, syntax, etc.
2. Dutch translations into French and German, and *vice-versâ*.
3. General and Dutch history.
4. Geography.
5. Arithmetic and algebra including equations with more than one unknown quantity, equations of the second grade, and practical working with logarithms.
6. Mensuration and geometry up to determining the surface and contents of prisms, pyramids, cones, cylinders, etc., etc.

Germany.

The German standard is prima or 1st class in a gymnasium, the same examination that any who adopt a university career, must pass. I have applied for the details of this examination but I regret to say that they have not yet reached me.

France.

Admission to the French Veterinary schools is competitive ; except in the case of students who have acquired the diploma of the Agricultural Institute or of one of the National Schools of Agriculture, who can claim admission as a right.

In order that permission to compete may be obtained it is necessary that the candidate shall possess one of the full degrees of Bachelor of Arts and Sciences, or special secondary instruction.

The competitive examination is held in writing and comprises the following subjects :—

1. An essay in French.
2. The solution of a problem in arithmetic or algebra and a problem in geometry.
3. A paper on physics and chemistry.
4. A paper on natural history including zoology, botany, geology.

It will be noticed that the educational tests for 1891 have been somewhat altered from former years. Geography and history are omitted from the competitive examination, probably because the student is sufficiently tested before he gets his B.A. degree.

So much as a sample of the demands of the veterinary schools. Let us see what the medical profession in England exacts from a young man who purposes to study for its diploma.

Medical and Dental.

The new regulations of the Medical Council for the preliminary examination in general education are as follaws :—

a. English language, including grammar and composition.

b. Latin, including grammar, translation from specified authors, and translation of easy passages not taken from such authors.

c. Mathematics, comprising (*a*) arithmethtc ; (*b*) algebra as far as simple equations, inclusive ; (*c*) geometry, the subject matter of euclid, books I., II., III., with easy deductions.

d. One of the following optional subjects :—Greek, French, German, Italian, any other modern language, logic.

You will kindly bear in mind that the dental student must pass the test as well as the medical student. The test can no longer be passed in fragments.

Let me now attempt to draw a very rough comparison between the different standards. You are no doubt aware that our present standard is about equal to an easy 3rd division of the 2nd class examination of the College of Preceptors. The medical and dental standard is about equal to the 2nd division of the 2nd class of the same college. The English dental and medical standard is about equal to the German lower third (Unter tertia) but somewhat stronger in mathematics.

I have said that a German veterinary student must attain "prima" (1st class) ; I am unable to tell you exactly what this comprises, but the average age for passing is 19 years. The French veterinary student almost invariably has a B.A. & B.Sc. degree which he can get at about 18 years of age. I am informed that the average age at which our medical and dental standard is reached is 16 years—at a good school.

So the French student is at school two years and the German three years longer than our medical students. Permit me also to draw your attention to the fact that in France and Germany the veterinary student is required to be as well educated as any other student.

I have troubled you with the demands of our neighbours so that you may judge for yourselves whether we are behind them or level with them in educational matters. It would be very extraordinary if all these people should

insist upon such a high standard if they thought it was unnecessary. No doubt, we cannot possibly raise our standard to the continental limit, but the question is whether or not we should put ourselves on a level with our own dental and medical educational demands.

I hold that we are wrong in not enforcing a standard of general education suited to modern requirements; for, in my opinion, a thorough education is one of the best things a young man can start with in life.

The next question is the length and items of the curriculum. Our plan of exams. is as follows:

A Examination.

1. Elementary Anatomy (equine and comparative). Bones and ligaments.
2. Chemistry.
3. Botany.—Foot plants, medicinal plants, poisonous plants growing in the United Kingdom, and the morphology of such.

B Examination.

1. Anatomy of the horse and other domesticated animals,
2. Physiology and histology.

C Examination.

1. Morbid anatomy and pathology.
2. Veterinary medicine and surgery, therapeutics, materia medica, and toxicology.
3. Diseases of other domesticated animals, veterinary medicine, surgery, therapeutics.
4. General Practical Examination—
   Certificates, prescriptions, dispensing.
   Other domestic animals.

As you are aware, a young man must, with us, have entered at least three years (eighteen months at college) as a student before he can obtain his diploma. I propose now to take you rapidly through the course of study in the allied professions.

Berne, Switzerland.

The minimum duration of the studies is seven terms of six months each, but very few students go up before the end of the eighth term, that is four years. In addition to the subjects taught at our schools they have to pass in physics, mineralogy, geology, zoology, veterinary jurisprudence, hygiene, elementary agriculture, medical history, principles of breeding, and veterinary medical history.

In Berne the veterinary students and the medical students study the following subjects together and in common, namely: Botany (botanical excursions), inorganic chemistry with practical chemistry, physics, geology, and zoology.

Denmark.

Through the kindness of my friend, Mr. Rogers, I am able to give you a sketch of the educational and professional arrangements in that conntry. A young man must have passed what is somewhat vaguely termed the "General Preliminary Examination" before he can be admitted as a veterinary pupil. This examination includes tests as to proficiency in two modern languages, of which the one must be English, while the other is nearly always German. The students do not reside at the college. Their course of studies is not strictly bound by regulations, as for instance in the German schools, but is almost like that of a university, the period of study consequently varying.

The majority study at least four years, but the curriculum is supposed to last three-and-a-half years, or seven terms of six months each. An examina-

tion in natural philosophy, chemistry, zoology, and botany, is passed after one or one-and-half years. After the student has passed the first important division of his final examination he has to attend for six months the ambulatory clinic of the College, and a course of instruction in matters concerning veterinary police, as well as *post-mortem* examinations, in which subjects a final examination is passed. Instruction is, during the whole period, practical as well as theoretical, being connected with the stationary clinic and smithy, &c., of the college.

Holland.

In the Royal Veterinary School at Utrecht, Holland, the studies last four years, nine months each at school, and cover the same ground as the Swiss curriculum.

Berlin and Hanover.

The curriculum of the Berlin and Hanover schools is practically identical, and covers the same ground as the Swiss. The curriculum lasts three-and-half years of seven sessions of, I believe, six months each session.

France.

In the French schools, the course is a four years' course; any student who fails to pass into a higher class when the proper time comes, is struck off the roll; but there is a saving clause in so far that a student may be sent down for a year, once in the curriculum. The following subjects are taught in the French schools :—

1. Anatomy of domesticated animals and the exterior of the horse.
2. Physics, chemistry, pharmacy, and toxicology.
3. Natural history and materia medica.
4. Physiology of domesticated animals, teratology (obstetrics), and therapeutics.
5. Pathology, medicine and surgery, clinic, practical operations, shoeing.
6. Pathology of contagious diseases, sanitary police, meat inspection, medical jurisprudence, and the laws relating to the purchase and sale of animals.
7. Hygiene and animal management.

As regards the duration of the curriculum in the other leading schools I will not detain you longer than to indicate it briefly, thus :—

Stockholm, Sweden, the duration is 4 to 6 years, of 9 months each.

Modena, Parma, Turin	Italy	each 4 years, of 9 months each.
Bucharest, Roumania		5 years.
Kazan, Russia		4 years.
Buenos Ayres, Argentine		4 years.
Vienna, Austria		3 full years.
Buda Pesth, Hungary		6 terms of 6 months each.
Kharkoff, Sorpat	Russia	3 years.

With regard to Russia I have received a most interesting letter from Captain Matthews, of the "Blues," who has recently visited that country. He says, "I know nothing of their matriculation examination, but judging by the 40 or 50 veterinary surgeons, civil and military, with whom I was brought in contact, I conclude it is a high one, for without exception I found them charming in manner and well educated, posted in 'the modern theories of medicine and disease. They all regard Pasteur as the veritable high priest of modern progress and scientific investigation. They are thoroughly practical in details of organisation and hygiene, but their advice and instructions seemed to be

modified and abbreviated by the executive. Their students study for three years, and when going up for their diplomas may also attempt for the higher degree of Magister. It is noteworthy that in the whole profession, numbering 2,000 in all, there are only 40 Magisters, all of whom, as would be expected, are in positions of trust, with corresponding remuneration. The St. Petersburgh school has been abolished in favour of Dorpat. All professions have their "ichin," or ranks, ten in all, seven of which are obtainable by veterinarians, and eight by medical men. The highest grade veterinary surgeons can acquire is that of actual State Councillor, which corresponds to the military rank of major-general, and carries with it valuable state privileges; thus every general has his children educated and placed in a suitable position free of cost."

The latest regulations in the English medical schools exact a five years' course of study. As to the dental faculty, the following paragraph is extracted from page 11 of *The Regulations of the General Medical Council*:—

"20. Candidates for a diploma in dental surgery shall produce certificates of having been engaged during four years in professional studies, and of having received three years' instruction in mechanical dentistry from a registered practitioner."

Under special circumstances one year of the above is reduced.

As you are no doubt aware, a sub-committee of the Council of the Royal College of Veterinary Surgeons is considering the matter of examinations. Two schemes have been printed by direction of the sub-committee. One is a three years' scheme, the other a four years' scheme.

PROPOSAL OF ALTERATIONS OF PROFESSIONAL EXAMINATIONS.

Suggestions for a Three Years' Scheme.

NOTE.—*Each subject* to be tested by a written and an oral examination, excepting subject 4 of examination A.

Written papers to consist of six questions, but only four to be attempted. Time allowed, two hours.

Oral examination in each subject to be conducted in the presence of specimens. Time allowed, half-an-hour, except subjects 2 and 3 of examination C, which shall not exceed one hour.

Examination A. (Three tables, two Examiners at each).

1. Anatomy of domestic animals (bones, ligaments, and muscles).
2. Chemistry.
3. Elementary physiology.
4. Simple stable management and manipulation of animals.

Examination B (Three tables, two examiners at each).

1. Anatomy of the domestic animals.
2. Physiology and histology.
3. Veterinary hygiene (stable management, dietetics, food substances, poisonous plants, shoeing).

Examination C (Three tables, two examiners at each).

1. Morbid anatomy and pathology (including bacteriology).
2. Principles and practice of veterinary medicine (including helminthology).
3. Principles and practice of veterinary surgery (including examinations for soundness and obstetrics).
4. Materia medica, therapeutics, and toxicology.

The effect of this scheme will be to introduce a "practical" examination into the B as well as into the C examination by the oral divisions of the last subjects. In the B examination it will apply to healthy horses, in the C examination to diseased, and to examinations for soundness.

Suggestions for a Four Years' Scheme.

NOTE.—*All subjects* to be tested by a written and an oral examination, in the presence of living and other specimens; except No. 4, of A, B, and C examinations and the practical of D examination, which will be entirely oral (except certificates).

Written papers to consist of six questions, but only four to be attempted. Time allowed for each paper, two hours.

The oral examinations, where not otherwise specified, to occupy half-an-hour at each table.

Examination A.

1. Anatomy of domesticated animals—Bones, ligaments, joints, and muscles.
2. Chemistry.
3. Botany—Food plants, grasses, cereals, roots, medicinal plants, and poisonous plants.
4. Simple stable management and manipulatiou of domestic animals. Horse and dog, twenty minutes; cattle, etc., ten minutes.

Examination B.

1. Anatomy of domesticated animals.
2. Histology and physiology.
3. Hygiene—Dietetics, drainage, ventilation, and construction.
4. Principles of shoeing in health; also remove and reapply a shoe. Half-an-hour.

Examination C.

1. Morbid anatomy, pathology, and bacteriology.
2. Helminthology and obstetrics.
3. Materia medica, therapeutics, and toxicology.
4. Nursing—Dressing, casting, slinging, administering medicines, chloroforming, dieting sick animals, preparing instruments for operations, and bandaging. Horse and dog, three-quarters-of-an-hour. Cattle, etc., quarter-of-an-hour.

Examination D.

1. Medicine and surgery—Horse and dog.
2. Medicine and surgery—Ox, sheep, and pig.
3. Sanitary, science and police.

Practical Examination.

1. Operative surgery—Horse and dog, half-an-hour; cattle, sheep, and pigs, quarter-of-an-hour.
2. Clinical medicine and surgery—Horse and dog, quarter-of-an-hour; cattle, sheep, etc., quarter-of-an-hour.
3. Conformation and marks; examination as to soundness. Certificates—Three horses for each student. A reasonable time to be allowed.

No student at College, when this scheme is sanctioned by the Council, to be in any way affected by it, and an interval of at least three years to be allowed between the passing of the scheme and its coming into force.

These schemes are submitted to you, not for the discussion of the details, because it would take a very long time to settle them, but in order to indicate the great advantages of a four years' course over a three years' course. Neither of these schemes has received the sanction of the Council yet.

I think, gentlemen, that if you have had the patience to follow me through this very dry subject, you will have come to the conclusion that our recruits—in fact that we as a body—are not required to have as high a standard of

professional education as our foreign colleagues. Of course, it is an open question whether we should endeavour to raise ourselves to the level of continental people and of our local dental faculty. I think we ought to have as good a general education as our English confrères. I support the four years' scheme for the simple reason that I believe it is a farce to attempt to get through the subjects in three years (that is to say eighteen months of study.) Perhaps some of my hearers may hesitate to vote, owing to a fear that if a four years' course is enforced there will be such a diminished supply of veterinary surgeons that we shall fail in our duty to supply the public with a sufficient number. In order to ascertain if there was any fear of such an untoward thing happening I have been through the register for the last ten years to discover how the question of demand and supply stands, and I do not think the public is likely to suffer in any way from the proposed four years' scheme, even if the number of candidates were somewhat reduced.

Admissions and deaths in the Veterinary Profession for the last ten years :—

	Admissions.	Deaths.
1881-82	155	30
1882-83	92	43
1883-84	103	41
1884-85	102	32
1885-86	166	33
1886-87	113	65
1887-88	123	55
1888-89	138	63
1889-90	138	54
1890-91	125	46
Total admissions ..	1255	 462
Total deaths ..	462	
	793	

According to the above there have been 793 more admissions than deaths during the past decade.

Having now arrived near the end of my paper, will you permit me to make a suggestion as to the way in which the subject may be discussed? You will perceive, gentlemen, that the ground I have gone over is extremely wide, and if discussed in detail would take days to finish. I would therefore submit to you that we had better consider general principles because if we confine ourselves to them we shall be able to come to definite conclusions to-night. Let me then put two questions to you.

1. Do you desire a higher general educational standard.
2. Are you in favour of a four years' course of study.

In conclusion, permit me to acknowledge the assistance I have received from Mr. Dollar's article on the French examinations published in *The Record*, to Mr. Rogers' article on the Danish examinations, and to Captain Matthews for his letter upon Russia. Professor Axe was kind enough to look over my original four years' scheme, and make some suggestions for verbal alterations. I have also to thank Mr. Hunting for allowing me to adopt some of his ideas, which have very much improved the four years' scheme, as at present submitted. I have also to acknowledge the assistance of Mr. Hodgeson, the Secretary of the College of Preceptors, has rendered; and last, but not least, the help Mr. Hill has given in procuring the necessary educational documents from the foreign and other schools.

Discussion.

Mr. SHEATHER said, "This question of veterinary education is an

extremely interesting and important one. In considering it we must bear in mind thae although we may arrive at some conclusions as to what constitutes the best general idea of improvement to be effected, it is a matter to be moved in with the greatest delicacy, and considerable time must elapse before an amended scheme can be set in force, owing to the regulations of existing examinations. There is no doubt, and in this I am quite in accordance with Captain Raymond, that a good sound general education is the best thing a young man can start life with in any calling. By all means let him have the best possible education; but it will be observed that there is a great deal of difference between having a good education and the capacity to use it; this is the most noticeable in a highly pitched type of scientific education. This grade of education frequently renders the mind sterile, and incapable of grasping aught else but the ground within its particular limits.

Reverting to the regulations controlling the preliminary examination in general education, my opinion is they are quite sufficient for the purpose at present, and the questions set are quite stiff enough for the grade of examination; but the far more important question comes in—does the examiner allow a low type of sound education to pass? is the examination any security that the student possesses other than a very low grade of education? I think it would be better if the examiners insisted on a higher grade as representing a "pass"; the fault does not lie in the subjects examined upon, nor the questions asked, so much as in the low degree of efficiency permitted as a pass in them. While upon this subject of preliminary examinations, I may say that 17 years ago the one to which I submitted myself on entering the profession was a fairly stiff one, but the one prior to the examination for the Fellowship Degree was about one-third as difficult. The form of our preliminary examination is very puerile; it makes no effort to discover whether an education really exists but confines itself to questions on the elements of an education, so different to the plan pursued upon the Continent. It is narrow-minded too, for if there is any subject upon which a Briton should be well informed it is that of geography. British possessions and colonies cover the earth; but in this preliminary examination the questions are confined to Europe and the British Isles. The subject of history should not be an alternative one with geography, for justly English History is in a measure the history of the modern world. Among the obligatory subjects of this first examination are euclid and algebra.

Mr. HUNTING:—They are useless, being simply tacked on to make it look big.

Mr. SHEATHER:—This confirms my prior expressions, that less depends on the form in which an examination is established, than the manner in which it is carried out. Passing over the information afforded by Captain Raymond's paper as to the examinations in Switzerland and Holland, I must just arrest your attention on that referring to France. Here we have some sensible attempt to arrive at the valuation of the education possessed by the student. In those four paragraphs constituting the subject matter of examination, exist all the means of testing an education. They do not simply ask the student elementary questions about his tools, but they ask him to produce the work he has effected with those tools. Certainly in this case France stands pre-eminent with a sensible form of preliminary examination free from puerility. Some years ago I visited the school in Brussels, and I found that physics formed, and very rightly so, one of the most important subjects of the curriculum. Comparing the education required in the medical profession with that in our own, everything points to the necessity in a medical man of a high class education; such an education is only really obtained amid refined and scholarly surroundings; but the medical man, unlike the veterinary surgeon, penetrates to the very hearts of our homes, becomes intimate with every

detail of our social lives, and becomes the repository of the inmost secrets of life. Were he not a highly refined, educated man, his reception in such a sphere would be impossible; no such influences demand a highly refined education in the veterinary surgeon.

Passing on to the matter of professional education, surety Captain Raymond's estimate of our present three years' curriculum at 18 months' actual instruction can scarcely be correct; this must be nearer 26 or 27 months (several fellows explained that at present it really only amounted to 18 months). Then I think it unfair on the student. The schemes relative to the three years' and the alternative four years' education seem to be nearly perfect. I hope the written and oral examinations will come into force; and I think, referring to the A examination and histology, that the student is not introduced soon enough to the microscope. It is an instrument that requires considerable experience and dexterity, and familiarity with it cannot be acquired too soon,

My ideal of a preparation for a professional career, now impracticable, but worthy of being kept in view for future years, would be:—On entry a preliminary examination of two grades, a "pass" and a "pass with honours," the first allowing a student to reach the degree of Member, the second conferring on him the right to reach that of Fellow. A three years' curriculum, at the end of which the membership examination must be passed, an additional year making a four years' curriculum for the student who has entered his preliminary "with honours" when he (having passed the membership) becomes eligible for the Fellowship. A Fellow would then have a higher grade general education and a lengthened scientific course; a far better plan than practising five years, which are just enough to dull his capacity for scientific study, and not enough to establish him head and shoulders above his confrères in ability. In the Fellowship degree we have a means of elevating the profession to a desired pitch of educational excellence.

There is one more point I must allude to; if you drag up to a high pitch of refined education every member of our profession, you will be leaving uncovered a portion of the field now covered by the veterinary surgeon with a moderate education and unambitious tastes—men who assimilate very well with the low class and uneducated stock-owner; and this will soon leave a vacancy for the operations of the Registered Shoeing Smith.

Mr. HUNTING said, I think we must all allow that Capt. Raymond has shown a great deal of energy and skill in getting up this subject. He has spared no pains to get information, and it is not easy to gainsay that his facts point to the conclusion he has arrived at. I must say I was not at first prepared to accept the scheme he has laid before us. As a convert I venture to offer my reasons for accepting Mr. Raymond's conclusions. As to the general education of the profession, there are two reasons why the standard should be raised. We are constantly complaining of our social position, and we point with pride to the duties we perform and the value of the services we render the public. What is it keeps us back? Simply education. The position we desire to fill can never be attained so long as the general education of our members is so deplorably low. As soon as we attain a higher standard of general education, we shall attain a higher social position. Mr. Sheather has pointed out that with a certain proportion of our clients any higher education would not be appreciated. I quite agree with him, and I know that for some little time to come the better educated man will suffer in the competition with the lower. The greengrocer and the little cabman will not understand the educated horse doctor. He quite understands the uneducated man who makes up for his ignorance by his cunning. We cannot help this, however much we may regret it. We all judge other men by our own measure, and with difficulty recognise the superiority of others. An old

maxim has it that "he who drives fat oxen should himself be fat," and we find that as a rule the practice of our art follows this law—the cad does the cad's work, and the gentleman the gentleman's. This, however, is not an argument against education. It only goes to show how good and beneficial it would be if our lower class clients were better educated, and that the higher our own standard is raised the higher the appreciation we shall obtain from those most worthy of giving it, and those best worth having as clients. We must remember too, that the education of all classes around us is rising, and that without a higher standard we shall not hold our own.

There is another reason why our matriculation test should be raised. Our technical education includes three or four sciences, to understand which requires a trained mind, and I assert that a mastery of these cannot be attained by any man who has had an inferior scholastic training. We must exact from our students such a degree of knowledge and training, as will show that they are able to absorb the teaching which is considered necessary for a veterinary surgeon. The choice of a matriculation test is not easy. No examination in a series of subjects shows exactly what a candidate is ; we can only approximately arrive at a conclusion. We very often mistake what education at school really is ; we forget that whilst the masters supply one half, the boys themselves supply the other half. The moral tone, the style, the habits and ways of thought depend quite as much upon the other boys at school as upon the masters. We must recognise this, and therefore instead of forming our matriculation upon a set of subjects we think necessary to a veterinary student, we must base it upon the course adopted at the schools where a liberal education is given, and where a certain social standard prevails. I think we cannot do better than follow the system adopted by the Medical Council. If we accept their standard of examination, we may not expect to have the same average of educational attainments, for many of their graduates pass far higher than their minimum. If our men are equal to their minimum we shall be content, and we shall ensure that a better class of graduate presents himself. We shall not only have men who know something of the geography of Europe and the rule of three, but men who possess some general culture. I believe not only in raising the standard of our matriculation but the standard of our professional examinations. We are not going to demand from our graduates more sciences, but we are going to ensure a more thorough knowledge of those which are essential. The Council and the profession are agreed that the examination should be conducted both by a written and an oral test. This will of course be more severe, and we think will require longer time for study. It is not fair to require from a man more than he can learn in the time, and I think the requirements now cannot be met by a three years' course of teaching. Four examinations will ensure four years' teaching. and then our graduates will really be scientific men and may claim the position we now only envy.

Mr. F. W. BARRETT : One is specially struck in noticing that most of the Foreign schools require a higher standard of education than the English colleges. Why this should be it is difficult to understand, because we are not behind them with regard to scientific attainments generally. Whatever educational test may be imposed upon the veterinary student, he will, when qualified, be unable to attain to the social position held by the medical man ; for the work of the veterinary surgeon is rougher, and the associations of the profession do not tend to dignity and refinement. It may therefore be unwise to compel the veterinary student to pass the usual medical preliminary examination, inasmuch as such training, although rendering him more competent, will perhaps induce a feeling of distaste for the rougher work of the profession. I do not think Latin is obligatory now ; the student can take either Latin, French, or German. I do not wish however, to convey the idea that I am not in favour

of a higher educational test. What I do assert is, that the registered practitioner, who is most likely an ignorant person, often satisfies the illiterate horse-owner—and there are many of them, when the qualified man fails to do so. The general advancement of education, and the impulse which has been given to scientific teaching, compel us almost irresistibly to adopt a higher preliminary examination, and to enforce a longer period of veterinary study. Generally, of course, the trained student will derive benefits of much value from his attainments; although he fail to satisfy a few ignorant clients he will, on the whole, procure higher fees and an enhanced social position.

The time has arrived when two foreign languages should be required of the veterinary student, and the college course be extended to four years. With regard to the new scheme, I think it would be better to strike out subject 4 in the A examination, and let the student devote his attention for the first year to anatomy, chemistry, and botany. During the second year he should study anatomy, physiology, and histology.

With respect to the C examination, I think hygiene might more profitably be included therein, together with principles of shoeing, etc. Examination D should be devoted entirely to medicine and surgery, and practical manipulations generally. I shall certainly, therefore, vote for higher preliminary examination and for the fonr years' scheme. The present mode of conducting the preliminary examination is most unsatisfactory, and when one knows men who have passed the entrance examination and yet know nothing of the subjects, one is drawn to the conclusion that the present test is little more than a farce. It is for thc Council to take up this matter, and if they fail to do so, the public opinion of the profession must assert itself and insist upon reformation. There should be one standard of examination for all the colleges, and this should be in the hands, or under the control, of the Council of R.C.V.S.

Lieut.-Col. DUCK: We all know the enormous advance education has made in the last few years; even the poorest children have sound and free tuition. The public of all classes have advanced. Have we advanced in proportion?

At the State Veterinary School at Brussels, with which I am acquainted, there is a different method of education. The students go through a course of instruction at a recognised public school, the last two years of which are devoted principally to medical subjects. Having passed this cousre, for which a certificate or diploma is granted, they go to the Veterinary State School for three years. In this school not only is a high scientific education given, but great pains are taken to teach the practical portion of the profession. At the public "clinique," at which there are tables for dogs, cats, poultry, as well as horses and cattle, each student goes through an allotted course, doing all operations, all the manipulations.

With regard to the Fellowship, I take a different view to the previous speaker. I hold no one should be eligible until he has been ten years in practice, and should prove by examination that he has not only not forgotten what he learned at college, but that he has kept his scientific education up to date, and has established an honourable reputation.

Of late years we have made great progress; many of our members hold important public posts, as veterinary inspectors, etc., and to extend these posts and still further advance, we must prove that we are an educated body, fully qualified to grasp the veterinary problems of the day.

I desire to give Captain Raymond hearty support.

Professor MACQUEEN: Mr. Raymond's paper falls short in some particulars, but I have nothing but praise to offer for his industry. At once, I may say, that I am in favour of a higher standard of preliminary examination and of an extended curriculum. Mr. Raymond does not say how professional examinations are conducted on the Continent. We should have had this information. His paper wonld have been more complete and satisfactory, if

he had noticed professional examinations as they are conducted at the Continental schools. In France the examinations are (or were a few years ago) conducted by the teachers. There is no State examination as there is, for example, in Germany. The students are subjected to examination by the professors at the end of each session. The diploma examination is a sort of extended class examination, conducted by the staff. Candidates are required to write an essay, to diagnose, attend and treat two cases of sickness, and to perform three examinations on the living animal. There is no scientific body like that of Red Lion Square. In Germany, since 1878, all the schools have been under one regulation. Quite recently some modifications have been introduced. There are two professional examinations—one on natural science—the other on veterinary subjects. The students study for four years. The Examiners are the Directors and Professors of the Schools, and such other persons as may be appointed by the Minister of the Interior. The Senior Director is responsible for the examination. In Austria the course is three years. The matriculation is not very stiff, but, I am told, the final examination is very searching. There is one examination at the end of each year on the subjects taught during that year. The examiners are the teachers. At the final examination the examiners include the whole staff, and one person named by the Government. In Russia there are three schools. From intending students a high standard of education is demanded. Some instruction on religion is given at the Russian schools. The course is three or four years, according to the degree obtained. The longer term is required for the higher degree of *Magister*—which, according to Mr. Matthew's letter—only some 40 graduates hold. In Sweden entrants must be *graduates in letters*. The preliminary examination is therefore very high. In Brussels the standard is said to be higher than that required in France—and the consent of the responsible Minister must be obtained by intending students. There are two professional examinations; one at the end of two years' study, the other at the end of the course—which is four years. In Continental schools there is an age limit. Above or below a certain age students cannot be admitted. There is no such restriction here. In France a student must not be younger than 17, or older than 25. In Sweden not under 20; in Austria 18 or 26. In France many of the students are intended for service in the Army, and are bound to the Authorities for five years. At the Berlin school the majority are military students, and all entrants intended for the Army must serve six months in a shoeing forge—must learn practical horse-shoeing—before they can enter the veterinary college. Army students require to serve two years in the service for each year's study at the college. The examination fees at the Continental schools are comparatively low. In Germany the first examination fee is about 20s. In case of failure the next fee is 10s. The final costs about 60s., and if the candidate requires to try again, the fee is 15s. In Austria the lengthy final examination costs a little over five guineas. College fees for civil students are much less than in this country. It should not be forgotten that these schools receive annually large grants of money from the Government—not to pay teachers only—but to purchase subjects, and apparatus; and to reward diligent and promising students. Some of my facts may not be correct—may not be up to date—because my information was obtained a few years ago. If alterations have taken place, I hope that subsequent speakers may correct where I am wrong. Mr. Raymond's paper lays down a very engaging programme for Continental schools, and if we must adopt that programme here, I think we should also follow the Continental method of examination.

The time has not yet come, perhaps, for the teachers of our schools to conduct the examinations; but should this extended programme be enforced, I should not be surprised if the authorities of our schools seek rapidly to

affiliate with the Universities—when the Continental method of education and examination would be assured. I look forward to the day when our colleges —our education and examinations—shall be as they are on the Continent.

Mr. HUNTING: Are they rival schools on the Continent? Have the teachers and professors any interest in the number passed?

Professor MACQUEEN: I am not aware of any rival schools.

Mr. HUNTING: Does it matter whether they pass or not?

Mr. MACQUEEN: Not at all.

On the motion of the Chairman, seconded by Mr. DOLLAR, the discussion was adjourned.

H. G. ROGERS, *Hon. Sec.*

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

(Continued from page 154.)

But a word or two about the instrument used. In this country we are using a trephine, which has probably been in existence 300 or 400 years. Trephining or Trepanning was a very common operation indeed in days gone by, both in human and veterinary practice; and I think the instrument which the majority of us are using at the present day is built on these antiquated principles. It has a screw on the top for the purpose of keeping the handle in position, but that screw bores a hole in your hand. It is very much in the way, and the sooner the instrument makers wake up to the fact that a screw in that direction is very awkward to work with, the better will it be for both horses and operators. You cannot put on any amount of pressure when you have a screw bearing on the palm of your hand. Now, a handle very much like a pianoforte-tuner uses is much more like what we want; but even that is somewhat antiquated. Our brethren abroad (who do not teach us many practical lessons) use a thing very much like a drill—a thing that goes round and round; and they get their circular piece of bone out in no time; and although I do not say for one moment that that is the best form of trephine to use, yet I am certain that this wretched thing, with a screw on the top, is a very bad instrument. The crown of the instrument also is, in the majority of cases, too small. I do not believe that boring a hole in the horse's head, about the size of a sixpenny-piece, is of very much use. I like to see into it, and to be able to see the influence of my dressings. Moreover, with an ordinary mirror, and on a bright day, one is able to throw some light into the cavity of the head, and examine the interior of it in the most perfect manner; and, in order to treat a case properly, one must be able to examine it thoroughly. We know that these wounds are very difficult indeed to keep open, and that they have a great tendency to close up as rapidly as possible; and, if the orthodox cork is taken out, you cannot get the point of your finger in again. One object of taking out a piece of bone is to prevent the rapid closing. I believe in a good opening in the head; firstly, because it allows free discharge, and, secondly, it admits of the part being most thoroughly and carefully inspected, which is a very important matter. Now as regards the seat of the operation. I have occasionally to examine gentlemen for Her Majesty's Service, and as this is not at all an uncommon operation, it is one of those which they are asked some questions about; and I have been horrified at the various positions which have been selected as the place where a horse can have a hole bored in his head. It is not uncommon to say it should be bored in the central line, or in such a position as to hit off the fangs of the second molar teeth. Now, although this is quite foreign to the subject under consideration, yet it has an important bearing on the anatomical instruction which our students get. I am afraid a very large amount of the fault must lie

with themselves; but it is quite clear that there is something wrong, and that something, especially when dealing with elementary anatomy, should be looked into by those who are responsible for the teaching of the men.

I say trephine high or trephine low; as high in the frontal as you can, and as low in the maxillary as you can for drainage. Suppose, for instance, you trephine, as many horses are trephined, an inch above and behind the zygoma, which hits off most perfectly the division which exists, what takes place? In the majority of cases your pus will deposit there. I trephine lower; I get as low as I conveniently can to the bottom of the sinus—because I know perfectly well my sinus will be constantly kept drained: and if you consider that to recover its healthy condition that sinus must always be kept empty, it is a very important matter to trephine as low as possible without affecting the teeth. Let us select an inch above the zygoma and an inch below (and supposing you trephine with an ordinary trephine, the size of a shilling), here is the position for the first opening. I generally trephine again immediately adjoining, and I invariably put in a third, and the sharp angles of bone I take off with a rat-tail file. That is the opening which will drain your sinus as far as possible without damaging the tooth. But with a trephine the crown of which was as big as a two-shilling piece, I should not hesitate to place it in such a way that I would first of all open the division between the upper and lower sinus, and, secondly, open the lower sinus sufficiently far down to prevent the pus from pocketing. If you are frightened (in the majority of cases these sinuses do run very funnily) of going too high, there is no objection to trephining in the ordinary manner first; and, if you find with your finger you can go higher, and you are able to, thoroughly disinfect the whole membrane. I believe, therefore, in trephining high and trephining low, and having a really good opening for the drainage.

The nature of the contents on opening the head, will depend entirely upon the length of time that they have been bottled up. Where it has been bottled up for some months it comes out as pus, no doubt, and often with a very unpleasant smell; but where the head has been opened within a reasonable time, it is more of a muco-purulent nature than of purulent. The condition in which we find the membrane is a very important one; it is perfectly gelatinous, and a quarter of an inch or half an inch in thickness. We set to work, and we wash out the whole of the head; we establish a thorough communication between the upper opening with the lower, and of both openings with the nostrils; and then what shall we do? I hold the next step in our proceeding should be to thoroughly destroy, by means of some cauterising agent, this pus-secreting membrane. This is very difficult indeed, and I believe the very best possible agent we have for that purpose is very strong solution of chloride of zinc. The effect of zinc-chloride dressings is to destroy the whole of this gelatinous membrane; and in the course of a day or two we find there is a very nice pink basement membrane left as the result of the cautery. And now, if our case is going on fairly satisfactorily, we get a very slight discharge indeed, for the reason that the vessels which have been secreting have been practically destroyed. I have used many other agents beside chloride of zinc, but I believe this offers the best means for the purpose. As to its strength, I am afraid the strength I employ is somewhat empirical. I use it in sufficient strength to scorch the membrane. It converts it into a white thing, very much like a piece of flannel. In a very few days this slough is cast off, and a very healthy condition appears. We generally hold—at any rate, it appears to be the feeling of the profession—that sinuses ought to drain through the nostril. Now, I may perhaps explain how I set to work to force a nasal passage where one will not come of its own accord. Let me suppose I have got my head trephined, as mentioned, and I am washing out the upper opening with a hose fixed on to a tap.

I have got large quantities of material coming out over the side of the face; but I cannot get any to come back through the nostril. I plug a piece of sponge into the lower hole, and I put on a lot of pressure above. I overcome something—something comes away; in a very few seconds volumes of water will be pouring down the nostril, much to one's satisfaction. Having established this opening, some practitioners—in fact, I did for years past—run a piece of tape from the upper opening to the lower one, which was generally spoken of as a seton. It passes through the natural communicating opening, and comes out through the trephined opening; and it was supposed to keep these two wounds open. As a matter of fact, I have not used these pieces of tape for many years past, and I find I get on as well without them. Our next step is to put something into the wounds which have been made in order to prevent them from closing, and I really think the very best thing we can use is the old-fashioned cork. Perhaps a champagne cork offers the best shape for the purpose, because you know you can press it any distance without losing it. But in closing the orifice entirely (I think this is a most important practical matter) we have made a mistake. The ordinary cork put in has exactly the opposite effect to that which we want to bring about; it bottles up the inflammatory matter, and when we take it out a quantity of material escapes from it. This closure is utterly wrong. A plug seems to be essential, but it should be perforated with a piece of glass tube to allow the discharge to pass out. All the corks I use for the lower opening, have a piece of glass tubing running through; and by that means I do not have a particle of material collected. For the first day or two I like dressing two or three times a day, simply washing out with plenty of water. After that, in the course of three or four days, morning or evening dressing is sufficient. If you have your tube of decent bore passing through the plug, nothing will collect in the sinuses. At any rate, a solid plug should never be left in, because it has the exactly opposite effect to that intended. There are many instances where we have to work without a satisfactory hose for the purpose of washing out the cavities; but this may be excellently performed by means of an ordinary Read's enema, or an ordinary funnel. They are not so convenient as using a hose, but where you have no hose they are as perfect a method as you can devise; and I hold this thorough flushing out with water is one of the essentials of the treatment. In the Service, a 2 oz. syringe is provided for this purpose, and is absolutely useless. If the glutinous membrane is left, you will have more pus formed. I have scraped it down with my fingers as far as I could, but remember the size of these cavities, and think of the distances they run in places which you cannot reach; think how useless it would be to depend upon this. Nothing, therefore, but the cautery—viz., such agents as I have spoken of—can be of the slightest use. You cannot get far enough with your fingers. I think, in carrying out the treatment, feeding off the ground is very desirable. It assists in carrying the discharge away if there is any tendency to obstruction. If our case is doing well, we now find that our slough gets cast off, that the gelatinous membrane comes away, that we have got a nice pink membrane left behind, and that the discharge has absolutely ceased. For the first two or three days, whilst the slough is coming away, you must make up your mind that you will get a certain amount of discharge, shreds of membrane, etc. Gradually the whole of this membrane comes away, and, by using a mirror, we are able from day to day to gauge how our case is going on. With sunlight thrown in below, we have the whole sinus practically at our fingers' ends; and if any places still exist on the inside of the sinus, which appear to have escaped the caustic action, the caustic should be re-applied. I cannot help impressing upon you the value which the mirror has been to me in the treatment of disease of the facial sinuses of the horse.

The length of time which these sinuses should be kept open depends upon how the case is doing. I think, however, they might reasonably be allowed to close at the end of three weeks, if we can make up our mind that the gelatinous membrane is entirely destroyed; but I have kept them open for weeks where doubt exists. If the case is doing badly, we continue to get a discharge, and in such cases I cast the horse at once, and examine, because you can never do this thing thoroughly standing. There is evidently some part which has not been got at, and it is easier to get at when the horse is down; and I may even consider it necessary to apply the chloride of zinc to every part where I can; and this has been attended with very satisfactory results. There is a condition in which no amount of treatment appears to be of the slightest use—as fast as you break down the gelatinous membrane so fast does it form again. You may even scrape out the interior of the head to no purpose. Now, what happens is most perfectly illustrated in the specimen which I exhibit. The tendency in chronic nasal gleet is to form bags of pus in all the sinuses. which bags do not communicate one with the other; but, in the majority of cases, communicate directly or indirectly with the nose. In the specimen exhibited you will also observe a tumour in the middle of the antrum, which blocks up the communication of the sinuses with the nasal chamber. The cases which do not progress favourably are cases in which these pus bags are present, which as rapidly as they are destroyed appear to form again. At all events, we must destroy these sacks entirely, and must go so far as scraping the whole of the surface inside the sinus by means of a scraper. Once I scraped a membrane entirely away, and it was followed by a most profuse hæmorrhage: and the only method I could adopt to avert it was to plug the same with tow, which had a most satisfactory effect: previously no amount of cold water on the face or the wound was of the slightest use. I simply stuffed it with tow, and the hæmorrhage gave no more trouble. We find these pus-bags are distributed all over the interior of the sinus, and in some cases the turbinated bones have become diseased. In addition, not uncommonly, the bones are thickened to such an extent that the case is perfectly hopeless. In the specimen exhibited we have a considerable thickening of the right side of the head. I am not so certain that nasal gleet does not occur on the right side more commonly than the left. In conclusion we have the question of dentistry. I believe that where we have got a very chronic discharge or irritation of those sinuses, that we ought to place beyond all shadow of doubt, the fact whether our fourth, fifth, and sixth molar teeth are sound or not. Even I should go so far as to extract the fourth molar. In one case I did extract the fourth molar. Firstly, I was under the impression that it was diseased, and secondly, I wanted to establish drainage into that horse's mouth. I have nothing more to add. I have touched on all the practical points, and I look forward with considerable interest indeed to the discussion which will follow.

Discussion.

The CHAIRMAN: I propose to ask Mr. Hunting if he will offer us a few remarks.

Mr. HUNTING: Mr. President and Gentlemen, One rises with some diffidence to make remarks on a paper like this, a good deal of which depends upon correct anatomical views of the question, and I am sorry to say I have not retained in my memory as much anatomical detail as I ought. As to the frequency of this disease, I am sure I see fewer cases now of impaction of sinuses than I did when I was much younger, and having mentioned the fact to a friend of longer experience I find his observation is similar. Are the causes of nasal gleet simply catarrh? I put aside of course the mechanical causes, but I have a notion that there must be something more than an ordinary case of aggra-

vated catarrh to produce impaction of pus in the sinuses or else it ought to be a more common disease. I could imagine that a very little swelling of the mucous membrane would block the small slit of communication between the sinuses and the nasal chamber, and perhaps a very small quantity of pus thus confined would start the disease, but if that were the case, why should not it occur oftener? I am inclined to think there is one condition of diseased teeth which very seldom exists without causing a collection of matter in the sinuses, and that is when the tooth is split. If it is split so that food or anything of that sort may pass up between the broken parts of the tooth then yon have a collection of matter. As to diagnosis, there is nothing like confessing one's errors, at any rate it may be a warning to other people. I have myself used a gimlet and I shall continue to do so. I think it is invaluable and you may do a lot of good by thus proving your diagnosis. I have in my search for truth bored a hole in a horse's head that was suffering from glanders, and only thus found it out. I have also bored a hole in a swollen maxillary sinus thinking it was filled with pus, and to my utter disgust found I had not taken the trouble to examine the teeth before I started. It was only after I washed out a little bit of hay that I looked for and found a broken tooth. With a gimlet you can confirm or correct a diagnosis. As to medical treatment, I agree with Mr. Smith that an awful lot of time is often wasted. Of course, none of us waste the time—it is always some other practitioner. A man who blisters a horse's face, with discharge from the nose, is not quite practising modern surgery; and a man who gives four or five dram doses of sulphate of iron is not doing so either; but I have seen both of these done. It is remarkable how blind some people are. A case was reported to me some time ago as glanders. The case started by the breathing becoming obstructed, and it was thought that the animal had inflammation of the lungs. It was one of those cases Professor Smith pointed out, in which you can put your pocket-knife through the bone, which is soft, thin, and bulged. Both sinuses were full of matter. As to the instrument, I do not think a very large hole is necessary. It is a nuisance to have anything that hurts your hand, and I rather like a centre-bit, such as carpenters use. I may also say for the general credit, that I do not think it was a surgeon whh introduced the insufflator, but a chemist. I do not want to throw any ridicule upon excessively scientific instruments; but I do not think it is altogether necessary to have the electric light or a reflector; and I am not at all certain that Professor Smith, by examining with his eye, gets much further. Now we come to a pretty strong difference. I am not going to deny the gelatinous membrane, but I do not think there is any gelatinous membrane that you need necessarily skin off; nor need you use strong caustic injections to destroy it; and I am going to object strongly to the pathology which tells us there is *a habit* of secreting pus. One thing is certain, that no pus is formed anywhere without organisms; so long as you have pus impacted in a sinus, so long will you have suppuration. The presence of pus there is like presence of leaven in bread. I believe that all you have to do, excepting in very exceptional cases, is thoroughly wash out the purulent contents of the cavity. Theoretical reasons one need not go into, but practically I have found what Professor Smith has—that there is something overlooked in cases that did not do well. He, in washing out with his injection, finds that something suddenly comes away; and I have found exactly the same, and know, when that comes away, you, as a rule, are at the end of your case. Now, what is that something? In the last case of this kind that came under my notice it was a portion of inspissated pus which was lodged in one of the narrow parts of these sinuses, and I am inclined to think that in most of these cases, at any rate, it is the hardened cheesy-like pus which has stuck in some portion that you cannot quite get out. Another thing, you find the same symptoms in washing out the two sinuses. You have

a hole in your frontal and a hole in your maxillary sinus. You may put on as much pressure as you like, and you cannot wash anything through from one to the other; but after some days you will find that the water, which has never done so before, passes through the maxillary upwards into the frontal. "Something has given way." I believe it is a portion of inspissated pus. In this case Professor Smith has shown us that he is undoubtedly right. I am not going to dispute the bags of pus he found in that case, but I am going to suggest that the specimen indicates a case unlikely to be cured, because you have got a large tumour blocking up the outlets; and I would ask you whether there were not some more of these tumours inside as well as the ordinary collection of matter in the sinus. I do not acknowledge this to be a usual case of collection of matter in the sinus. I think that it is an extraordinay case, and not one from which ordinary deductions can be made. As soon as ever the wounds were healed up, this tumour, which you could not by any possibility get at, would cause a re-collection. As to signs of recovery, I have never seen a case where the matter did not stink; and I set more store by the absence of smell than I do upon anything else as a sign of recovery. When I find my case washes out clean, and water passes from one sinus into another, then I think I have got a cure. I do not think that the device to make your openings low down in your maxillary and high up in the frontal is right. I, myself, once trephined a good deal too high up, with this result—that for some days whenever I filled up the sinus with water I could not get it out again, and whenever the animal shook his head, it sounded as if he had half-a-pail of water in it. I then made another opening lower down, and I could thoroughly wash the whole frontal cavity out. The upper part gradually would of itself tend to produce the fall of any matter sticking there; and, therefore, I do not think I would insist upon making my holes high up in the frontal, but I certainly agree in making them low down in the maxillary.

Mr. BARFORD: I should like first to give my hearty thanks to Professor Smith for the extremely interesting paper which he has favoured us with. I must say I agree with most of what he said. These are a class of cases which give us an infinite amount of trouble, and I also agree with him in the very great value of early penetration of the bones of diseased sinuses. I am satisfied also that there is no benefit to be derived from injecting up the nostrils, but at once begin at the top; explore the frontal sinus, and afterwards the maxillary sinus if the trouble is found to be lower down, and evacuate what contents you have. I am satisfied that is the right treatment. It is very important we should carefully examine the roots of the molar teeth to find that they are not the cause of the disease.

Mr. GOODALL: I am sure we are much obliged to Mr. Smith for his paper. As regards the extraction of teeth, the extraction of the fifth molar in a seven-year-old head, such as he had there, is a thing we should keep from as long as possible. You will see what a difficult thing it is even to extract the fourth molar tooth, and you should keep from it as long as possible. The fangs of the teeth are curved backwards, but you have to prise the tooth from the front. It is a most difficult thing to extract horses' teeth, and remember that horses' teeth, unlike those of other animals, are solid blocks. A very interesting item, which Mr. Smith did not mention, is that regarding the difference in the cavities at the different ages of the horses. All these sinuses are very different in horses of different ages, and you want to regulate your opening according to the age of your horse; and in extracting teeth remember that the horse's teeth are different to those of any other animal. They are solid blocks that go up here (illustrating). When you get a very old horse you find very little of the fang left; you get this compound structure; those cavities are nearly all closed over. You find a horse's cheek sunken away, and there is scarcely a cavity at all. In an old horse the outer walls of what

you call the lower maxillary sinus is usually in conjunction with the cheeks, being sunken. You will see it is full here, and it gradually sinks in until it is quite sunken in, and there is scarcely a cavity at all. You want to consider a little the age of the horse. There is just a little point of interest here. Possibly you may not have taken the trouble to notice that when you get disease of the molar teeth you nearly always find it is the fourth molar that first becomes carious. The reason is that it is the oldest tooth in the horse's head; you find it is always the shortest. As to keeping your wound open, you will find it is the best thing to use as a drainage-tube a bit of india-rubber tubing. I use it in all my operations where I want to drain a discharge, and it cannot produce injury. I should think in forcing a passage into the nasal chamber that there would be danger of injuring the ethmoidal cells. I have used an insufflator with success, and I maintain that when you have any smell from the nose there must be a communication, and probably a larger communication than the normal opening. If the opening were closed you would have no discharge. I have used an insufflator with success, not once but two or three times in my experience. Now, how can medicaments be forced into the small natural opening? You know what a delicate passage it is through the Eustachian canal from the posterior nares into what we call the cavities at the bottom of the throat. Now, I once opened a horse that was drowned, and I found the tubes were full of sand; and when you put an irritating substance into the nostrils they naturally draw whatever agent you put in into these cavities. As regards diagnosis, if you get no smell at all, or no sound on percusssion, and a discharge from the nose, I should be very sorry indeed to diagnose that as a case of nasal gleet. Mr. Hunting lightly touched on the production of pus. I cannot look on pus as being secreted. It is certainly the white corpuscles of the blood thrown out to keep out a foreign body. I do not know whether you have ever tried the experiment of putting a tadpole's tail under a microscope, and pricking it? You see the little blood-cells flock round the point of injury as though to shut it out. The pus-cells are thrown out as white cells, and I cannot think that they are secreted. There is just one other little thing that struck me. It is the simplest thing in the world, without the least trouble, to destroy any smell from specimens. Directly you have them prepared as you want them, keep them soaking for a few days in water, and them dip them into a solution of the per-chloride of mercury. They will then keep perfectly fresh for ever.

Mr. RAYMOND: Let me at once thank Mr. Goodall for the very valuable hint he has given us about the per-chloride of mercury. Unfortunately it is not very new.

Mr. GOODALL: I took that out of a very old book.

Mr. RAYMOND: Now, in the first place, I should like to say a few words about the diagnosis of nasal gleet. I think that it is difficult, because you may very often have a disease of long standing of the membrane of the nose which may not affect the facial sinuses, and still may give rise to a nasal gleet. Now, my reason for saying that is this. Mr. Smith holds very strong ideas about the use of an insufflator. Now, whether it is owing to the disease of the membrane of the nose solely, or whether it is that this opening into the sinuses of the head does remain more patent than some of us think, I think there is very little doubt in the minds of practical men that cases do occur of nasal discharge of long continuance, which may be cured by insufflation. Some time ago I experimented with an apparatus which I invented really for the purpose of treating chronic cough. I wanted to invent some machine which would enable me to get into communication with the larynx either by the mouth or the nose. I found it very easy to get there through the nose. In course of time I had cases of catarrh which I treated. They got well, I think, a little quicker by that treatment than by the medical

treatment. Later on I had a case of nasal gleet, in which the ordinary treatment was adopted and failed, and when it came to the question of trephining, I thought I would try this apparatus on it, to spray the nasal membrane. Well, of course it can be explained in any way you like, but this horse got well in a fortnight.

Prof. SMITH:—Had it pus in the sinuses?

Mr. RAYMOND:—That is a question of diagnosis. I should think he had, and the veterinary surgeon who had been treating it previously thought so also. We may both be wrong. It was a case of very long standing and the discharge from the nose, which was purulent, stank. Now in diseases of membrane I think one or two other speakers have been very hard on Iodoform. I believe it is very largely used in human practice, and I have used it a great deal in equine practice, and I find as a surgical remedy it is an antiseptic. In human surgery it is largely used in all operations on serous membrane such as the abdominal in the form of solution in either. I may tell you that I have used my spray apparatus for insufflating cases of nasal discharge, which have not been cured, and of course the result has been that they have been trephined. What Mr. Smith says about that knob in the handle of our trephine, anybody who has done very much trephining will agree with. It hurts your hand considerably, and the larger instrument he has introduced is a very good one indeed, particularly for trephining the frontal sinus. As regards inserting a drainage tube of India rubber into the nasal cavities, I do not think it is of much use. At any rate it won't keep the opening open so well as a cork.

Mr. GOODALL: It is through a cork I mean, and I might also mention that I find borax and iodoform most useful in dressing these cases.

Mr. EDGAR: Mr. Chairman and gentlemen, I think we are very much professionally indebted to Mr. Smith as we have been on many other occasions for reminding us of very important matters in detail in surgery. Sir Joseph Lister said success in surgery was wholly dependent on matters of detail, and of this I feel certain, although I do not approach this subject so much from the surgical as from the medical side; I rather gave up the surgery as a failure, and turned to the opposite condition. We know that Mr. Smith is a surgeon, and one of the best we have in the profession, and of course we look at things very often from different points of view, but I am certainly unable to endorse the remarks he makes. I am very glad to hear Mr. Raymond and another speaker support the view that medicinal treatment in these cases very often is certainly successful.

(To be continued.)

ROYAL AGRICULTURAL SOCIETY.

AT the Monthly Council Meeting, held on February 3rd, Sir JOHN THOROLD stated that Professor Brown had submitted the annual report for 1891 of the Royal Veterinary College, which the Committee recommended for publication in the next number of the Journal. A revised edition of Professor Brown's pamphlet on "Animals of the Farm in Health and Disease" was now in the press, and would be issued in a few days. The deaths were reported of Mr. Osborn Hills, of Leamington, and Mr. J. B. Polding, of Red Lion Street, Burnley, the Society's Provincial Veterinary Surgeons respectively for the counties of Warwick and Lancaster. The Committee recommended the appointment of Mr. Joseph H. Carter, F.R.C.V.S., of Burnley, in the room of Mr. Polding. The examiners in cattle pathology for the diploma of the Royal College of Veterinary Surgeons in 1891 having reported that the following gentlemen, placed in order of merit, had attained the greatest distinction—(1) Mr. G. H. Williams, Riverside, West Drayton; (2) Mr. M. T. Sadler, Burton-on-Trent.

The Committee recommended that the Society's large medal be given in silver to Mr. Williams, and in bronze to Mr. Sadler.

Professor BROWN had presented the following report:—

PLEURO-PNEUMONIA.—During the four weeks ended January 23rd, 1892, thirty-one outbreaks of this disease were reported to the Board of Agriculture. In five of these the local veterinary surgeons employed by the Board detected the existence of other diseases without slaughtering. In twenty-six instances a test animal was slaughtered for the purpose of diagnosis, when eight were found affected with pleuro-pneumonia and eighteen with other diseases of the lungs. There were twenty-eight cattle affected with the disease, slaughtered, and also 317 healthy cattle, which have been exposed to the risk of infection.

ANTHRAX.—There were twenty-one fresh outbreaks of this disease reported in Great Britain in the four weeks. They occurred in the counties of Devon, Essex, Hunts, Leicester, London, Northampton, Northumberland, Westmoreland, and York, W.R., in England, and in Aberdeen, Elgin, Midlothian, Nairn, and Perth in Scotland. Of the thirty-five animals attacked one was killed, thirty died, and one recovered.

SWINE FEVER.—In Great Britain 117 outbreaks of swine fever were reported in the four weeks; 871 pigs were attacked, 439 diseased swine were killed, 375 died, 143 recovered, and 210 remained alive when the last return was made up.

Army Veterinary Department.

Gazette, January 26th.

YEOMANRY CAVALRY.—Hampshire (Carabiniers). Veterinary-Lieutenant H. Leeney resigns his commission.

Nottinghamshire (Southern Nottinghamshire). Edgar David Johnson, Gent., to be Veterinary-Lieutenant.

Gazette, January 29th.

YEOMANRY CAVALRY.—Royal Wiltshire (Prince of Wales's Own Royal Regiment). Frederick Pearson Bennett, Gent., to be Veterinary-Lieutenant.

Gazette, February 2nd.

VETERINARY DEPARTMENT.—The undermentioned gentlemen to be Veterinary-Lieutenants, on augmentation:—Henry Joseph Axe, Alexander George Seath, Francis Dillon Hunt and Ernest Edmund Martin.

Gazette, February 9th.

VETERINARY DEPARTMENT.—Veterinary-Captain W. H. Kemp to be Veterinary-Major.

Gazette, February 12th.

WARWICKSHIRE YEOMANRY.—Thomas Horton, Gent., to be Veterinary-Lieutenant.

Gazette, February 16th.

VETERINARY DEPARTMENT.—Veterinary-Captain Mathew Clayton Mitchell is placed on temporary half-pay on account of ill-health; Harry Briscoe Knight, Gent., to be Veterinary-Lieutenant, in succession to Veterinary-Captain M. C. Mitchell.

Veterinary-Lieutenant E. Wilkinson has embarked for a tour of service in South Africa, to relieve Veterinary-Captain Rowe, whose period of service in that country expires shortly.

It has been decided at last, after many years' cogitation, to establish an Indian Civil Veterinary Department, which will be made up of eighteen officers selected from the Army Veterinary Department, except the Inspector-General, who will be at first, we presume, one of the old Indian establishment, only three of whom now remain. It is announced that candidates will be required

to serve on probation for at least a year, to pass an examination in the vernacular, and to elect for continuous service in the Civil Department, subject only to the liability to return to military duty in the event of serious war. In forming the Department an endeavour will be made to conform as nearly as possible to the following scale:—

Inspector-General	1
Veterinary-Surgeons, 1st class, with over 10 years' service in that class	3
Ditto, over 5 years' ditto	3
Ditto, under 5 years' ditto	2
Veterinary-Surgeons over 10 years' service	3
Ditto do. 5 do.	4
Ditto under 5 do.	2

In dealing with the question of pay, the scale of regimental pay allowed to Bengal medical officers has to some extent been taken as a guide. Veterinary officers are, it has been recommended, to receive a staff allowance varying from 150 to 400 rupees a month, according to rank in the army. The scale proposed is as follows:—

Veterinary-Surgeons:	Indian Military Pay, &c.	Civil Allowance.	Relative Rank.
Under 5 years' service ..	Rs. 400 ..	150	Lieut.
After 5 do.	450 ..	200	
Do. 10 do.	500 ..	250	
Veterinary-Surgeon, 1st class ..	600 ..	300	Captain.
After 5 years in that class ..	650 ..	350	
Do. 10 do. do. ..	750 ..	400	Major.

It is probable that these terms will not tempt many of the army veterinary surgeons to embark on a career of continuous service in India—at least, of those who are now serving at home.

Parliamentary Intelligence.

HOUSE OF COMMONS, *February 11th.*

THE OUTBREAK OF FOOT-AND-MOUTH DISEASE.

IN answer to questions from Mr. PICTON, SIR E. BIRKBECK, Mr. CHANNING, and Mr. JEFFREYS, in reference to the reported outbreak of foot-and-mouth disease,

Mr. CHAPLIN said:—I will endeavour to reply to all the questions on the paper on this subject, though I am afraid at more length than is usual in answering a question, by stating all that we know with regard to the recent outbreak of foot-and-mouth disease in the Metropolitan Cattle Market, and the steps which we have taken with the object, if possible, of arresting the spread of the disease. On Thursday last, February 4, the inspector at the Metropolitan Cattle Market, Mr. Rayment, discovered that six animals out of a herd of 11 Danish cattle were suffering from foot-and-mouth disease. The discovery was confirmed by the veterinary officers of the Board, who immediately proceeded to the market, and they at once gave orders for the gates to be closed against the exit of all animals from the market. Upon inquiry it was ascertained that the 11 animals referred to formed part of a cargo of 68 cattle and two sheep which sailed on board the "Fano," from Esbjerg, in Denmark, on the evening of January 27. The cargo was landed at Harwich on the 30th, and, after being detained for the usual period, and carefully examined by the inspector at the port, it reached the Cattle Market on Monday, February 1. Immediately upon these facts becoming known, orders

were issued providing for the slaughter of all animals then in the market prior to their leaving it. A telegram was sent to all the local authorities of the country informing them of what had occurred, and warning them to be on their guard. The inspectors at the ports were instructed to detain all Danish cattle in their charge, or that might be on the way, as soon as they arrived. The further importation of animals from Denmark was prohibited by order; and inquiries were set on foot at once with the view of tracing 59 animals—*i.e.*, 57 cattle and two sheep—belonging to the Danish cargo, which had left the market prior to the discovery of the disease. These 59 animals, I am happy to say, were all of them traced before the close of the following day to their respective destinations, at Chatham, at Rochester, at Aldershot, at Shorncliffe, at Stratford, and in the metropolitan district, where the bulk of them had remained; and arrangements were made for the slaughter of all the animals which had not been killed already. On the same day—Friday, the 5th—two English beasts, the animals to which the hon. member for Leicester refers, were found in the lairs at Islington suffering from the disease. It is correct that they came from Norfolk, but I have caused inquiry to be made at the place from which they came, and that inquiry shows that no trace of disease was found there, and all the stock upon the place in Norfolk were perfectly healthy. So far as we can learn, these animals must have been infected in the lairs. There is no evidence whatever to show that they could have infected the Danish cattle, who were found to be suffering on the previous day, or that the disease had developed in their case before the landing of the Danish cattle in the country. On Saturday, the 6th, information was received that the disease had been discovered in some of the Danish cattle which had been removed to Rochester. These were slaughtered, together with a number of animals with which they had been in contact, which were followed and killed; and on the same day an order was passed prohibiting the entire movement of animals from the metropolitan district, and from all the other places in which the Danish cattle had been sent. On Tuesday last I regret to say that further outbreaks of the disease were reported from Clapton, Bromley-by-Bow and from Welling, near Dartford, in Kent, all of them being places within the metropolitan district, and to which cattle from the Metropolitan Market had been sent. In all these cases, inspectors have been immediately sent down, the animals slaughtered and the places disinfected. Another case was reported to us this morning from Bethnal-green. There were five cattle in the shed, and the disease, as in the other cases, had been introduced from the market on the 1st of February. The same procedure has been adopted with regard to these animals to-day. In addition to these measures, the holding of all markets in the metropolitan area has been temporarily prohibited. Instructions have been issued to all the local authorities in the metropolitan district as to the steps to be taken on the discovery of the disease. Inspectors have been appointed to visit and watch the metropolitan dairies; and while I cannot conceal from the House that, in my opinion, the danger of its spreading to the country is extreme, I am not without some hope that the disease may still be prevented from escaping beyond the metropolitan area. In further reply to the member for Leicester, I may say that the Danish Minister was good enough to send me a telegram from his Government on the 5th, from which it appeared that, up till then, they had failed to discover the existence of the disease in Denmark. But I have had no further information, official or otherwise, since then. We know, however, that it has quite recently spread from Germany, where it is very prevalent, to Schleswig-Holstein, and I am advised that it is quite possible that the disease may have been conveyed by traders from Hamburg or Altona to the cargo which left Ebsjerg on the 27th, before they were embarked. Lastly, in answer to my hon. friend the member for East Norfolk—and I

apologize to the House for the length of this reply—as to whether still greater precautions will be taken in future, I may add that the importation of animals from the Netherlands has been suspended as well as from Denmark. The only European countries from which animals are now admitted are Norway, Sweden, Spain and Portugal, and I do not know of any greater precautions which it would be possible to take, short of prohibiting all importation from these countries also.

Mr. PICTON inquired whether the cattle slaughtered at Rochester were part of the Danish cargo?

Mr. CHAPLIN: Yes.

Mr. PICTON: Was the diseased traced in any other of the 59 animals?

Mr. CHAPLIN: The disease was traced in two of the animals at Rochester, both of which formed part of the Danish cargo.

Colonel WARING asked whether precautions would be taken with respect to the disinfection of drovers bringing cattle from Ireland, so that they might not convey the disease on their return?

Mr. CHAPLIN replied that he took the earliest opportunity of informing the Irish Government of what had occurred, and he had not the least doubt that every necessary precaution had been taken by them.

Sir E. BIRKBECK wished to know whether definite instructions were given to the British Consuls abroad to keep careful watch, so that information might be sent to England of the outbreak of foot-and-mouth disease?

Mr. CHAPLIN stated that such instructions had been repeatedly given, and, as far as he knew, they were carefully carried out.

Jurisprudence.

SERIOUS CHARGE AGAINST EXTENSIVE VENDORS OF FROZEN MEAT.

A MANAGER HEAVILY FINED.

IMPORTANT CASE.

AN important action against the British and Colonial Meat Company was heard at the Dudley Police Court, before Mr. J. R. Tilley and Dr. T. F. Higgs, on the 7th January. The two summonses against the company charged them with having in their possession, at their shops in the Market Place and Hall Street, Dudley, a quantity of meat unfit for human food. Two similar summonses, in respect to the same shops, were taken out against the company's manager, Charles Smith, who was charged conjointly with the company.

Mr. E. M. WARMINGTON (Town Clerk), appeared to prosecute on behalf of the Urban Sanitary Authority, and Mr. Alfred Young, Birmingham (instructed by Mr. James Smith, Liverpool), defended.

Mr. WARMINGTON, in opening, said there were four summonses taken out in this case; two against the British and Colonial Meat Company, and two against the company's manager in the town. They were all for the very same offence, and as in a conversation he had had with Mr. Young it was admitted that the manager was liable, and that the proper person to be summoned was the manager, he proposed that they took only the summonses against him; there could not then arise any difficulty as to whether or not they had summoned the proper persons.

Mr. YOUNG: And the other two summonses will be withdrawn?

Mr. WARMINGTON: Yes. Proceeding, he remarked that the summonses were taken out under the 116th Section of the Public Health Act, which gave

power to any inspector of nuisances in a borough, if he had any reason to believe that there was unsound meat being exposed for sale or deposited for purposes for sale, to go and examine it, and, on reasonable demand, seize it and take it before two magistrates. In the case before the Court the inspector of nuisances for the Borough of Dudley (Charles Pargeter), owing to complaints made to him, went to the defendants' shop in the Market Place—and he might here add that he was able to get in very easily without breaking open doors, &c.—and there found six breasts of mutton, six breasts with shoulders, eight breasts of mutton, six carcases, and one hind quarter of beef—in all 27 pieces of meat—which he considered unsound, unwholesome, and unfit for human food. It would also be shown in evidence that the meat was hung up in the shop along with other meat and that it was dressed. This was on the Sunday, and he did not know whether any objection would be raised on the point.

Mr. YOUNG: No, we shall not raise any objection on that point.

Mr. WARMINGTON said that if an objection had been raised on the point he should have contended that it was the absolute duty of the inspector to go anywhere he suspected there was unwholesome food, and at any time, in order to carry out the work that became his duty under the Act of Parliament mentioned. The inspector, in this case, after having gone into the shop and examined the meat, left a person there and sent for Mr. Abraham Green, Veterinary Inspector for the Borough, and the Medical Officer of Health (Dr. Timmins), and they would hear from them that the meat was most offensive and most unwholesome, and from the appearance, using the sight, the smell, and the touch, the only conclusion that they could come to was, that it was unwholesome and totally unfit for human food. This meat was brought before two justices—Mr. T. Reynolds and Mr. J. Williscroft—and it was condemned and ordered to be destroyed. He instructed the Inspector of Nuisances to give the defendants an opportunity of examining the meat, and on the Monday following the defendant took various persons to see it in consequence, and he supposed that day they would have conflicting evidence as to whether this meat was unwholesome or not. It was perfectly true that if the justices condemned meat their decision was of a judicial character, but at the same time their verdict was liable before that Court to be impeached. The two magistrates who examined the meat in question were thoroughly convinced in their own minds, before making the order for its destruction, that it was unwholesome, and, in addition, the meat was taken before the Medical Officer of Health, the Veterinary Inspector (Mr. Green), and Dr. Messiter, and he really did not think there could be the slightest doubt in the minds of the Bench that the meat was unwholesome and that a violation of the Act had been committed. With regard to the defendants, he thought it was only fair to point out that they had in no way obstructed or interfered with them in carrying out the work they had to do. The company, he believed, was a highly respectable one, and looking at the fact that the meat supplied at the defendant's shops was for the most part for the working classes, and that a great deal of it came from abroad, he did not expect it to be of the same quality as that for which a very much higher price was paid. He admitted that point, and that this was the first complaint that had been made against the company or their servants, but he contended that meat under all circumstances, although it might be of an inferior quality, must be wholesome, and if it was proved to the satisfaction of the magistrates that the meat in question was thoroughly unwholesome and unfit for human food they would have no alternative but to inflict a fine.

CHARLES PARGETER, Sanitary Inspector for the borough was first called. He stated that from information received, he went at 10·45 a.m. on October 11th, to the defendant's premises in the Market Place. In company with his

assistant, Taylor, he entered the premises by the back door, which was unlocked, and in the store room adjoining the shop, he found six breasts of mutton, with shoulders, eight breasts of mutton, six carcases of mutton, and one hind-quarter of beef, and in the shop six breasts of mutton, all of which were soft, sticky and green. In his opinion it was unwholesome and unfit for human food. They were all dressed and hanging on hooks in the wall. He seized all the meat mentioned, and left his assistant in charge of the shop, while he went for the Medical Officer of Health and Veterinary Inspector. Both of them went to the shop, and saw the meat which he had seized. He then conveyed the meat to the police station, where it was condemned by two justices, and it was finally destroyed on their order. At one o'clock the same day, he visited the shop in Hall Street, and there found in similar condition three legs of mutton, thirteen breasts of mutton, one half shoulder, and two carcases of mutton. All these were seized and also condemned and destroyed.

By Mr. YOUNG: He instituted the present proceedings. He had seen frozen meat, and knew that the meat in question was dressed and imported from abroad. As long as the meat was in its frozen condition, it was less likely to go bad, but when it was taken from the refrigerator it would "give way" before English meat. No doubt, the meat was good as long as the frost was on it; it did not look so well after it was thawed, and might suffer from the damp which was exuded. The business carried on at the two shops was a pretty fair one. He believed the shops were opened on Mondays. He did not believe the meat would be likely to get in the condition described between Saturday and Monday. There would have been ample time between Saturday and Monday for setting aside unwholesome meat. There might be greater difficulty in keeping frozen meat than other sorts. He did not know how the company disposed of any meat, which they found unwholesome; but he had heard of unwholesome meat going out of Dudley, and coming back in the shape of tinned meat and sausages (laughter).

Mr. YOUNG: You don't suggest that this company has adopted this practice?

WITNESS: Oh no.

Mr. YOUNG: I suppose you have heard of the man who would not eat his own sausages because he knew what was in them, and would not eat those made by other people because he did not know what was in them? (Laughter.)

Mr. TILLEY said he should like to know if the shop was opened on the Monday?

WITNESS re-examined: He saw the shop open at about nine o'clock on Monday. The meat was hanging up ready for sale, and the only person on the premises was a young man who was cleaning up. The company's shops had not been opened on the Mondays of the last few weeks. He could not say what had been the previous practice.

In reply to the Magistrate's Clerk, Mr. YOUNG said he raised no objections to any of the summonses.

Dr. TIMMINS, Medical Officer of Health, said he examined the meat on October 11th, and saw it taken away from the premises. It was decomposed, unwholesome, and unfit for the food of man. There was no firmness about it, it smelt very badly, and it was of various colours. All the meat seized was in the same condition. He did not think it could have become in that condition from the Saturday.

By Mr. YOUNG: He had not had any experience with regard to frozen meat. He knew that there was a difference between meat killed in this country and foreign meat. If unwholesome meat was frozen abroad, its condition would not be detected until it was thawed.

Mr. ABRAHAM GREEN, M.R.C.V.S., was the next witness. He said he was

Veterinary Inspector for Borough and County. He saw the meat in both the shops on the day in question. It was decomposed, wet, flabby, and was going green and purple. It also smelt very offensive.

By Mr. YOUNG: He did not think it could have become so unwholesome between the Saturday and Sunday morning. Some of the pieces were still wrapped in the linen, in which they had been imported from abroad, and some of the linen was in a decomposed condition. It was all frozen meat. If the meat was diseased when it was frozen abroad, the symptoms would develop more clearly in the thaw.

By Mr. WARMINGTON: The carcases were green and yellow on the surface, and if they had been those colours before freezing, the refrigeration would not have altered their appearance.

Dr. MESSITER, who also examined the meat on the 11th October, said it was green, yellow and purple, and in some places it was decomposed to the bone. The smell arising from it was sickening, and it was perfectly unwholesome and unfit for human consumption.

By Mr. YOUNG: Anyone could have told by the sight and smell that the meat was bad.

Mr. YOUNG then addressed the Bench for the defence. Having made some complimentary remarks with regard to the fairness with which the case for the prosecution had beeen conducted, he remarked that for his own part he had not the slightest complaint to make against the authorities for instituting those proceedings; indeed, he freely admitted, having regard to the condition of the meat seized at the shop, that it was the bounden duty of the prosecution to institute those proceedings. The prosecution having made out a *prima facie* case it was *a fortiori* that the defendant should rebut the evidence for the prosecution with even stronger evidence. He did not desire in the slightest degree to blink at the seriousness and importance of the case, but was anxions to deal with it as fairly as he could, without any embellishment on the finding of the circumstances as were and would be before the Court. He could not help thinking that more evidence had been addnced than was necessary to show that the meat was unwholesome, but he would strongly direct the attention of the Court to the fact that the whole of the medical evidence was in agreement with his contention, that there was a vast difference between meat killed in this country and that imported from abroad in a frozen condition and kept in the company's refrigerators at their central emporium at Birmingham. The conditions in the latter case were totally different, and he would ask the magistrates not to lose sight of that point in arriving at their decision. With regard to the specific complaint made against the defendant, he admitted that the meat seized was on the defendant's premises, and that it was unwholesome, but he most emphatically denied that it was intended for the food of man, and upon that point they would have to judge from two aspects, first from the evidence of the various scientific witnesses, and secondly from the evidence which he should supplement. The only point, he contended, that the magistrates had to consider was whether the meat seized was really intended for the food of man, and in connection with this aspect of the case, he would remind the Bench that whilst the Public Health Acts threw the *onus* on the person charged of proving that the meat was not intended for the food of man, the legislature made him an incompetent witness, as he was just as disabled from giving evidence on his own behalf, as if he were taking his trial on a charge of wilful murder. The meat seized was killed abroad, dressed abroad, frozen and kept frozen at the company's emporiums at Birmingham and Liverpool, until it was fetched out of stock for the different shops belonging to the company, when it underwent the process of thawing; and as the company disposed of an immense quantity of this meat, particularly to the working-classes, it was

manifestly to their interest to see that it was perfectly wholesome. The company were particularly careful that the meat offered for sale was of good quality; and so as to ensure this, as they would hear in evidence, district managers were appointed to visit the company's shops twice daily and thoroughly examine it. If after examination any meat was found to be unwholesome and not right to offer to the public, it was disposed of in another way, and not for the purposes of human food. The meat in question was examined twice on the Saturday previous to the Sunday on which it was seized, and they would hear that it was then considered perfectly wholesome. It was quite true that if the frozen meat was initially bad or the atmosphere unfavourable its unwholesomeness would develop more rapidly than under ordinary conditions, and as the meat in question was duly examined on the Saturday and found to be all right and that it was unwholesome on the Sunday, the only suggestion was that the frost got out of the meat very rapidly in consequence of the unfavourable conditions, and the meat went bad. He was not going to raise any question as to Sunday being a proper day for the officials of the sanitary authority to exercise their powers. He strongly urged the magistrates to bear in mind the fact that the conditions in this particular branch of the meat trade were altogether different than were met with in universal practice. The company's shops were not opened on Mondays for the purposes of trade, and the fact that the persons in charge of the shops were under strict instructions to put on one side any meat that was at all suspicious, pointed to the contention that the meat in question was not intended for the sale of human food. When the shops were opened on the Monday for cleaning, or on Tuesday for the purposes of business, the condition of the meat that was actually seized in the shop would have been discovered and put away altogether. It was idle to suppose that if the meat had been in the condition on the Saturday night described by the various witnesses that anyone would have purchased it; the customers' olfactory nerves would have discovered the condition of the meat, and, metaphorically speaking, they would have turned up their noses at it, and this fact only strengthened the contention that it was the rapid thaw which caused the meat to go bad so soon. It was impossible, he contended, to suppose that it was intended to sell meat in the condition described for the food of man, and if the defendant discharged the *onus* laid upon him by the evidence of a competent witness, he asked the Bench to dismiss the case. He pointed out that the Act under which the defendant was summoned was a highly penal one, and whilst fully admitting that the Corporation had made out a *prima facie* case with regard to the possession and unwholesomeness of the meat, he asked the magistrates not to convict on a mere technicality but to say that the meat was not intended for the food of man, and to dismiss the case.

James Lazenby, Inspector of the Walsall district for the British and Colonial Meat Company, was then called as a a witness for the defence. He stated that he was in the habit of going round to the different shops in his district twice a day, and if he saw any meat at all unsatisfactory he directed the shop manager to put it away altogether. Some of the meat seized had come from Liverpool and some from the emporium at Birmingham on the previous day. Business at the company's shops was not transacted from Saturday night until Tuesday morning, and they were only opened on Monday for the purpose of cleaning. The shops were opened at 8 o'clock on Tuesday mornings with fresh supplies of meat.

By Mr. Warmington: The meat generally arrived at Dudley at 8.30 a.m., and he went twice every day to see it. He saw the meat in question twice on the Saturday, the 11th October, once at 10.30, and again at 5 o'clock, and all of it, in his opinion, was then good. They generally stacked the meat up, because it kept better in that position, and was not so liable to thaw. The

carcases were examined by stripping down the linen. He had heard what Mr. Green had said with regard to the colour, but did not agree with it. The meat was always in good colour when it was frozen, though it might be unwholesome when it was shipped. The condition of the meat could not be disclosed when the frost was in it. They kept the linen on the carcases to prevent the meat from getting dirty.

In reply to Mr. TILLEY, who asked how long the meat took to thaw, witness said that it all depended on the weather; if it was cold it did not thaw so easily, but if damp it did. Meat that had been frozen, when it did thaw, did so very rapidly, sometimes in an hour, and they tried to keep the frost in it as long as possible.

By Mr. YOUNG: He had had twelve years' experience in the particular trade, and it was absolutely impossible for anybody to tell whether the meat was unwholesome whilst the frost remained in it.

This concluded the evidence.

The magistrates then retired for a short time, and on returning Mr. TILLEY said they considered that the case was clearly proved, and that the evidence was exceptionally strong as to the condition of the meat. They therefore had no alternative but to inflict a fine.

Defendant was then fined £2 and costs, in respect of six breasts of mutton in the Market Place shop, £12 and costs; and £1 in respect to a half-shoulder of mutton and thirteen breasts of mutton at the Hall Street shop, £14 and costs; making the total fines £26 and costs.

Mr. YOUNG: We shall give notice of appeal in due course.

VETERINARY FORGES.

ROYAL COLLEGE OF VETERINARY SURGEONS *v.* ROBINSON.—On Feb. 15th, in the High Court of Justice, Queen's Bench Division, before Justices Hawkins and Wills, this case, stated by one of the Metropolitan Police Magistrates, and alread referred to in the JOURNAL, raised a question under the Veterinary Surgeons Act of 1881, of some importance. The respondent, John Robinson, carries on business at Kensington as a shoeing smith or farrier, and has done so for 25 years, having in front of his premises a sign with his name on, followed by the words, "veterinary forge." The College took proceedings against him, alleging that he had committed a breach of the Act of Parliament, but the Magistrate was of opinion that the use of the words in question did not constitute a description within the meaning of the Act, representing that he was specially qualified to practise a branch of veterinary surgery. The College appealed against this decision.

Mr. LUMLEY SMITH, Q.C. (with whom was Mr. Colam), submitted that the use of the word "veterinary" was an intimation to the public that it was not a common farrier's forge, but a forge kept by a person skilled in the veterinary art, who carried out the work of shoeing upon scientific principles, or that it was a place where the assistance of a veterinary surgeon could be obtained. Respondent had therefore infringed the Act.

Mr. GEORGE ELLIOTT, on behalf of the respondent, argued that the question was one of fact, and not of law; and that, therefore, the matter had been decided by the judgment of the Magistrate. Moreover, he submitted that the description which defendant had used long before the Act came into operation was legitimate, and did not come within the scope of the statute.

Mr. Justice HAWKINS said he was of opinion that the Magistrate ought to have convicted. Anybody reading the sign could come to no other conclusion than that respondent represented that he was specially qualified. It was obviously one of those cases which it was intended by the Act to provide

against. At the same time, under the circumstances, it was not a case for punishment, as it was only desired that the law should be known.

Mr. Justice WILLS concurred.

Mr. LUMLEY SMITH said the object of the proceedings was that the law should be ascertained, and the College therefore did not ask for the costs of the appeal.

The case was accordingly remitted to the Magistrate to deal with.

THE FITZWYGRAM PRIZES.

WE are asked to state that Lieut.-General Sir F. Fitzwygram, Bart., offers his prizes as usual, to be competed for by the students of the Veterinary Colleges. Full particulars will be forwarded to the Principals of these colleges in due course.

THE VETERINARY CONGRESS OF 1881 AND THE STEEL MEMORIAL FUND.

A GENERAL meeting, convened by circular, of the surviving members of the British National Veterinary Congress of 1881, was held at 10, Red Lion Square, London, on February 16th, Dr. Fleming in the chair, to decide whether the balance of money raised for that Congress, and which had remained in the hands of the secretary and treasurer since that time, should be transferred to the Steel Memorial Fund. The result of the meeting was that the money is to be added to the fund.

THE J. H. STEEL MEMORIAL.

We wish to remind our readers that this Fund closes on the 1st March, and that those gentlemen who desire to assist are earnestly requested to forward their subscriptions to the Treasurer, Dr. G. Fleming, C.B., Cathcart Lodge, Tyrwhitt Road, St. John's, S.E.; or to F. Wragg, Esq., 17, Church Lane, Whitechapel, E.

On the 8th March, at 3.30 p.m., there will be a meeting of the General Committee of the Fund. At 4 p.m. on the same day there will be a General Meeting of all the subscribers. *(To save expense as much as possible, this is the only notification which will be issued.)*

AGENDA.

1. The Report of the Working Committee.
2. The Treasurers' Report.
3. Discuss the form the Memorial is to take.
   N.B.—The question of a reward to post-graduate students will probably be raised.
4. Any other business connected with the Fund.
5. That contributions be closed, and the Fund be disposed of.

Notes and News.

WHITE CATTLE AND TUBERCULOSIS.—At a recent meeting of the Agricultural Society of Nièvre, Dr. Turigny made a somewhat singular communication. The Nivernais cattle are white, and he considers that it is owing to that colour that tuberculosis is so prevalent in that race. "These cattle," says Dr. Turigny, correspond to the albino in the human race. In trying to give to this breed a white coat, which it did not possess in its wild state, the breeders had changed it into develop tuberculosis. Then they are fattened for the butcher, and the meat is received as of good quality. Is it, then, to be wondered at, that this breed, both male and female, inherit tuberculosis? The English say, 'Time

is money'; the French breeders say, 'Quick fattening is money.' The latter would be a considerable advantage," says Dr. Turigny, "if it were not for anæmia, the predisposition to abort, and to contract tuberculosis." The Agricultural Society of Nièvre, which includes so many eminent breeders, does not share the theories of Dr. Turigny. There are other causes for tuberculosis than the colour of the cattle, as those whose coat is not uniformly white do not escape this disease any more than the Nivernais and the Charolaise. The seizures made at the slaughter-houses of La Villette by the Sanitary Service leave no doubt upon this point.

HORSE-FLESH AS FOOD.—The total number of horses killed for human food in Paris during the past year was 21,291, of which 402 were condemned as unfit for consumption. In addition, 229 donkeys and forty mules were killed for the same purpose, and the meat of these 21,156 animals was returned as weighing 4,615 tons. There were 180 shops or stalls for the sale of this meat, which varied in price from 10d. to 2d. a pound, but not more than a third is sold fresh, the remainder being used for making sausages.

ADMINISTERING DRUGS TO HORSES.—At Donington (Lincolnshire) Sessions, on January 28th, a farm servant named David Buskell, in the employ of Mr. Carter, an extensive farmer in the district, was sent to prison for a month for administering drugs to horses. The complainant had previously suffered owing to the practice of using drugs, which is common amongst horse-keepers, and when the defendant was hired he was cautioned about the matter. Evidence was given showing that several valuable mares under his charge had been seriously injured by being given drugs. The magistrates regarded it as a very serious case, and inflicted a fine of £3; in default, a month's hard labour.

ALOPECIA IN ANIMALS.—In the Stuttgart *Repertorium der Thierheilkunde*, Professor Hoffmann, of the Veterinary School in that city, describes a case of Congenital Alopecia in a seven-year-old cow, and the *Mark Lane Express* states that there are at least two hairless horses in the United States, one of which has a silky, smooth, skin of a black colour. It has neither tail, mane, nor body hairs, and is of a heavy build. The other specimen does not seem to perspire through the skin, but rather through the mouth and nose.

HORSE MUTILATION.—A writer in the *Live Stock Journal* for February 12, refers to the description of a lost horse, given by its owner, who lived in Derbyshire in 1549. The animal was a "black curtail nagge," and was said to be "an old jade, as false as he is old. His ears and tail cut, his nose slit, his mane shorne, a little white on one of his fore feet, two saddle spots on the far-side, somewhat dale backt, and hath a bare spot on one of his buttocks as if he were scalded. He hath been stifled of both his hind legs, and is white-spotted on both his hams with gartering. When he was lent he was not fully recovered of a stifling of his near hind-leg, and was sore in the ham with gartering. He racks and trotts, and if the country had been champaign (*i.e.*, open fields) he would have come home." The writer remarks, that it is evident from this letter that in "Queen Elizabeth's day" horses got rather rougher handling and surgery than would now be tolerated. Certainly we do not see them with their ears closely cropped or their nostrils slit, but their tails are as barbarously mutilated as they ever were at any time.

Correspondence.

"CORN-STALK DISEASE IN CATTLE."

SIR,—I have been extremely interested in the discussions on this disease, and when in London last summer was shown the lungs of cattle, which were stated to resemble lungs of animals suffering from it. I should have had no

hesitation in stating that they were affected with Pleuro-pneumonia of the contagious form.

I would venture to suggest that perfectly healthy non-contaminated cattle should be fed upon corn-stalks; that the corn-stalks should, if possible, be sent to England, and the result of the experiments recorded by a board of Veterinary Surgeons.

The one thing that astonishes me is, that Americans believing that corn-stalks will produce a lung disease apparently eastly confounded with *Pleuro-pneumonia contagiosa*, should continue to feed their cattle upon corn-stalks. It would very much simplify matters if they found another diet for them. Should American cattle land in this country showing lung lesions similar to those of the Deptford ox, I shall have no hesitation in advising that they be sent direct to the Public Abattoir, and not allowed up country. I shall consider the classical appearances sufficient, and the difference in the form of a micro-organism will not be entertained.

Dr. Billings' experiments recorded in the VETERINARY JOURNAL for February of this year are of the greatest interest to me, although I entirely differ from him as to their value, as I think from the *post-mortems*, that all three animals died from Septicæmia, and that no diseases resembling *Pleuro-pneumonia contagiosa* or Broncho-pneumonia or Corn-stalk disease was produced.

I don't attach such immense importance to the finding of micro-organisms and cultivating them, more particularly when one does not produce the same lesions in the animal inoculated as were found in the animal from which they were taken.

WILLIAM LITTLEWOOD,
Chief Veterinary-Inspector,
Sanitary Administration, Egypt.

Cairo,
February 14th.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from P. Schwin, Elkart, Indiana; L. S. Cameron, Fitzroy, Australia; J. D. Allman, London; H. G. Rogers, London; A. W. Hill, London; T. Bowhill, Edinburgh; Gen. Sir F. W. Fitzwygram, Bart., Leigh Park; F. C. Mahon, London; G. Thatcher, London; W. Planner, London; J. A. Nunn, Lahore, India; Professor Williams, Edinburgh; Vet.-Capt. F. Raymond, Woolwich; J. Smith, Huntingdon; E. Clark, London; Vet.-Lieut. L. J. Blenkinsop, Lahore; W. Littlewood, Cairo; Messrs. Arnold and Sons, London; R. C. Edwards, Chester; E. F. de Jong, Edinburgh; A. W. Cheever, Dedham, Mass., U.S.A.

BOOKS AND PAMPHLETS: The Dog Owner's Annual; *Dr. H. Möller*, Lehrbuch der Speciellen Chirurgie für Thierürzte; The Johns Hopkins Hospital Reports; *T. Pader*, Précis Théorique et Pratique de Maréchalerie: R. B. Bell. The Veterinarian's Call-Book; Annual Report of the Massachussets Commissioners on Contagious Diseases Among Domestic Animals for 1891; *Goubaux, Barrier, and Harger*, The Exterior of the Horse; Nouveau Dictionnaire Pratique, etc. Vétérinaires, vol. xx.

JOURNALS, ETC.: *Archiv-für Wissenschaftliche und Praktische Thierheilkunde; Repertorium der Thierheilkunde; North British Agriculturist; Revue Internationale de Bibliography Medicale, etc.; Invention; Moderno Zooiatro; Clinica Veterinaria; American Veterinary Review; Journal of Comparative Medicine and Veterinary Archives; Repertoire de Police Sanitaire Vétérinaire; Revue Vétérinaire; Annales de Méd. Veterinaire; Echo Veterinaire; Lancet; Rtcueil de Méd. Vetérinaire; Edinburgh Medical Journal; British Medical Journal; Practitioner; Live Stock Journal; Mark Lane Express; Journal de Méd. Vétérinaire et de Zootchny.*

NEWSPAPERS: *East Essex and Halstead Times; Eastern Counties Gazette; Manchester Courier; Cheshire Observer; Edinburgh Evening Dispatch*